

# Service Manual

**National / Panasonic** **VHS** **HQ**

VHS-C Movie

**NV-MC10** EG/E  
B/A  
EN/EM  
EA/EP

AC Adaptor

**VW-AMC1** EG/E  
B/A  
EN/EM  
EA/EP

*General Description*

*Adjustment Procedures*

*Block / Schematic Diagrams*

*Exploded Views / Parts List*



**National / Panasonic**

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# INTRODUCTION

*This service manual contains technical information which will allow service technicians to understand and service this model.*

*Section 1 presents you with some general information of features and controls, enabling you to become familiar with each function.*

*Section 2 contributes to your mechanical and electrical adjustment as well disassembly and replacement procedures.*

*In the case of very common information relating to other models like mechanical adjustments, please refer to each service manual.*

*Section 3 contains block diagrams which offers you information for checking and understanding each circuit. Schematic diagrams which give you detailed information such as waveforms, voltage data, function e.t.c...*

*Section 4 contains exploded views and parts list.*

*Please place orders using the parts list and not the drawing reference numbers.*

*If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.*

## CONTENTS

**CHAPTER 1    NV-MC10EG/B/E/EN/A/EA/EM/EP**

**CHAPTER 2    VW-AMC1EG/B/E/EN/A/EA/EM/EP**

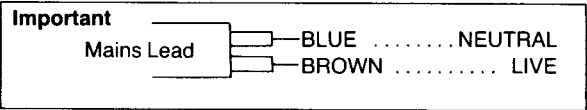
**IMPORTANT**  
Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

**WARNING**  
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

- VHS-C Movie NV-MC10
- The rating plate is on the bottom side of the VHS-C Movie.
- AC Adaptor VW-AMC1
- The rating plate is on the bottom panel of the unit.
  - This apparatus was produced to BS 800:1983.

### FOR YOUR SAFETY

- **AC MAINS LEAD CONNECTION.**  
(VW-AMC1 U.K. model only.)  
The wires in the mains lead of this apparatus are coloured in accordance with the following code.



As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows: The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.



VHS-C Movie

# NV-MC10

EG/E  
B/A  
EN/EM  
EA/EP

## SPECIFICATIONS

ITEM	SPECIFICATION	ITEM	SPECIFICATION
POWER	Source: BATTERY; DC 9.6 V Consumption; Recording mode; 8.3 W (Battery operation)	AUDIO	HEAD: 1 Stationary head (Normal Audio)
			INPUT: MIC IN (M3); -70 dB, 4.7 kΩ unbalanced
RECORDING SYSTEM	4 rotary heads, helical scanning system PAL		OUTPUT: 8 PIN CONNECTOR; -8 dB 1 kΩ unbalanced
TAPE FORMAT	VHS-C Cassette Tape (Tape width 12.7 mm)	WEIGHT	Approx. 1.22 kg (without Battery Pack)
TAPE SPEED	SP mode: 23.39 mm/s LP mode: 11.70 mm/s Record/Playback Time SP mode: 30 min. with NV-EC30HG LP mode: 60 min. with NV-EC30HG FF/REW Time less than 3 min. with NV-EC30HG	DIMENSIONS	120.5(W) × 150.5(H) × 274.5(D) mm
		ACCESSORIES	1 pc. AV Output Cable 1 pc. AC Adaptor (VW-AMC1EG/B/E/EP/EN/EA/EM) 1 pc. Battery Pack (VW-VBC1E/EN) for NV-MC10EG/B/E/EP/A/EA 2 pc. Battery Pack (VW-VBC1EN) for NV-MC10EM 1 pc. Shoulder Strap 1 pc. AC Plug Adaptor for NV-MC10EM only 1 pc. RF Adaptor (VW-RFC1E/EN/A/EA) 1 pc. Battery for Clock 1 pc. VHS-C Cassette Adaptor (VW-TCA1E/EN) 1 pc. System Carrying Case (VW-SHMC1E/EN) 1 pc. VHS-C Cassette Tape (NV-EC30HG/NV-EC30HGEN) 1 pc. Character Generator (VW-CG1E/EN) 1 pc. Car Battery Cord (VW-ACC5) 1 pc. Handgrip (VW-GPC1) 1 pc. Soft Case (VW-CB1) 1 pc. Pause Remote Control Unit (VW-RM1/VW-RM1EN)
CAMERA	PICK-UP ELEMENT: CCD (Charge Coupled Device)		
	STANDARD ILLUMINATION: 1,400 lux		
	MINIMUM REQUIRED ILLUMINATION: 15 lux		
	LENS: Built-in 6 : 1 Power Zoom Lens with MACRO Function, Auto Iris, Auto Focus System, F1.2 (9 ~ 54 mm), Filter Diameter/φ49 mm		
	VIEW FINDER: 2/3" B/W Electric View Finder		
	WHITE BALANCE: Auto White Balance/ Indoor/Outdoor		
VIDEO	HEADS: 8 rotary heads, 1 fling erase head		
	OUTPUT: 8 PIN CONNECTOR; 1.0 Vp-p 75Ω terminated		

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.

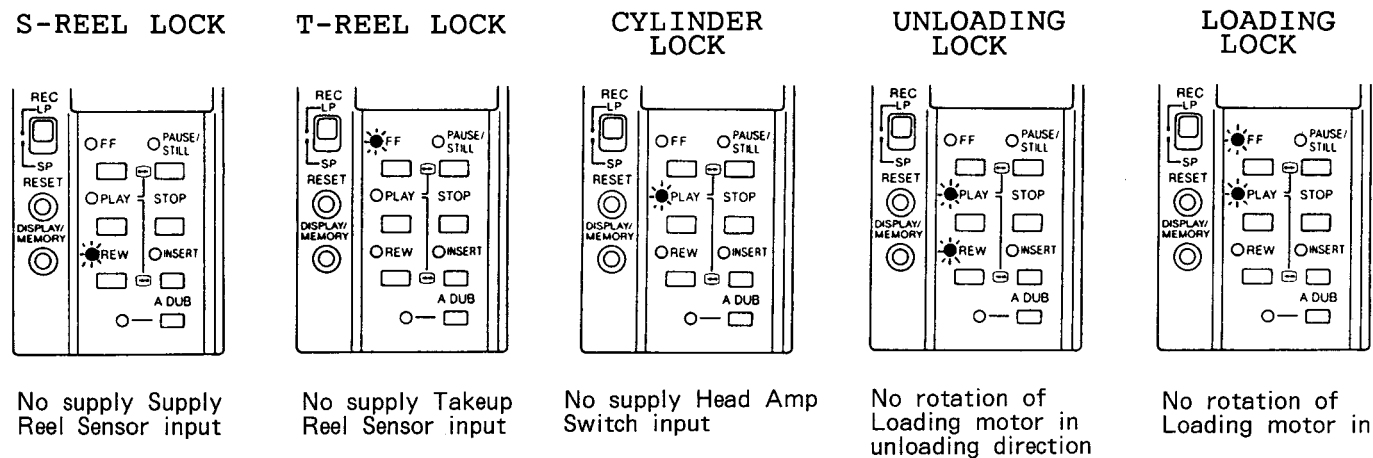
# CONTENTS

<b>SECTION 1 GENERAL DESCRIPTION.....</b>	<b>1-1</b>
<b>1. HOW TO USE VHS-C MOVIE.....</b>	<b>1-1</b>
1-1. FEATURES.....	1-1
1-2. CONTROLS AND COMPONENTS.....	1-1
1-3. ELECTRONIC VIEWFINDER.....	1-3
1-4. VHS-C MOVIE SYSTEM ACCESSORIES.....	1-3
1-5. SETTING OF THE DATE AND CLOCK & RECORING THE DATE/CLOCK INDICATIONS.....	1-4
<b>SECTION 2 ADJUSTMENT PROCEDURES.....</b>	<b>2-1</b>
<b>2-1. DISASSEMBLY METHOD.....</b>	<b>2-1</b>
2-1-1. DISASSEMBLY FLOW CHART.....	2-1
2-1-2. VTR SECTION.....	2-1
2-1-3. CAMERA SECTION 1.....	2-5
2-1-4. CAMERA SECTION 2.....	2-8
2-1-5. E.V.F. SECTION.....	2-8
<b>2-2. PROCEDURE FOR CLEANING UPPER CYLINDER UNIT.....</b>	<b>2-9</b>
<b>2-3. REPLACEMENT AND ADJUSTMENT PROCEDURES.....</b>	<b>2-9</b>
2-3-1. REPLACEMENT OF UPPER CYLINDER UNIT.....	2-9
2-3-2. REPLACEMENT OF CYLINDER UNIT.....	2-11
2-3-3. REPLACEMENT OF CAPSTAN MOTOR UNIT.....	2-11
2-3-4. ADJUSTMENT OF TENSION POST POSITION.....	2-13
2-3-5. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS (PRELIMINARY ADJUSTMENT).....	2-13
2-3-6. TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT).....	2-13
2-3-7. ASSEMBLY AND ADJUSTMENT PROCEDURE OF MECHANISM.....	2-16
Service Fixtures & Tools.....	2-21
<b>2-4. ELECTRICAL ADJUSTMENT PROCEDURES.....</b>	<b>2-22</b>
2-4-1. ELECTRICAL ADJUSTMENT FOR CAMERA SECTION.....	2-22
2-4-2. ELECTRICAL ADJUSTMENT FOR E.V.F. SECTION.....	2-34
LOCATION OF TEST POINTS & CONTROLS — Camera Section —.....	2-36
LOCATION OF TEST POINTS & CONTROLS — VTR Section —.....	2-38
2-4-3. ELECTRICAL ADJUSTMENT FOR VTR SECTION.....	2-39
<b>SECTION 3 BLOCK DIAGRAMS &amp; SCHEMATIC DIAGRAMS.....</b>	<b>3-1</b>
<b>3-1. OVERALL BLOCK DIAGRAM.....</b>	<b>3-1</b>
<b>3-2. CAMERA PROCESS BLOCK DIAGRAM.....</b>	<b>3-2</b>
<b>3-3. VIDEO RECORDER PROCESS BLOCK DIAGRAM.....</b>	<b>3-6</b>
<b>3-4. CAMERA OPERATION SCHEMATIC DIAGRAM.....</b>	<b>3-13</b>
<b>3-5. CAMERA OPERATION C.B.A.....</b>	<b>3-13</b>
<b>3-6. PROCESS C.B.A. &amp; ENCODER PACK C.B.A.....</b>	<b>3-15</b>
<b>3-7. PROCESS &amp; ENCODER PACK SCHEMATIC DIAGRAM.....</b>	<b>3-19</b>
<b>3-8. AUTO FOCUS SCHEMATIC DIAGRAM.....</b>	<b>3-24</b>
<b>3-9. AUTO FOCUS C.B.A.....</b>	<b>3-26</b>
<b>3-10. SENSOR &amp; C.D.S. PACK SCHEMATIC DIAGRAM.....</b>	<b>3-29</b>

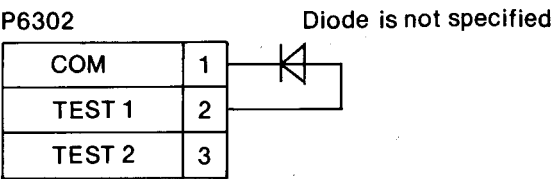
# Technical Information

## 1. SELF-DIAGNOSING SYSTEM

The microprocessor IC601 (uPD75108G) has the programme for Self-diagnosing system, which provides a great deal of service information for quick trouble-shooting.  
If undesirable condition happen to the unit, the LEDs start to flash in different combination depending on the fault as shown in Fig. 1.



Note: Connect the Diode between Pin2 and Pin1 as shown below.



## 2. SERVICE CAUTION

### 1. Servicing the VTR Section

Remove Cabinet Parts and VTR C.B.A.s in the order described in the Disassembly Section and place them as shown in Fig. 2.

Connection of the Extension Cables (A) (VFKS0067), (B) (VFKS0068), (C) (VFK0429), (D) (VFKS0068), (E) (VFK0430), Y/C Separator Connection Cable (VFKS0074) and Y/C Separator (VFK0304) are necessary for servicing.

#### Note:

1. When unplugging or plugging in connectors use extreme caution.

- (1) Connects the Extension Cable (A) (VFKS0067) between P2001 on the Main C.B.A. and P2601 on the Drive C.B.A.
- (2) Connects the Extension Cable (B) (VFKS0068) between P6002 on the Main C.B.A. and Full Erase Head Cable.

- (3) Connects the Extension Cable (C) (VFK0429) between P3502 on the Main C.B.A. and P5502 on the SP Head Amp C.B.A.
- (4) Connects the Extension Cable (D) (VFKS0068) between P6002 on the Main C.B.A. and Cassette Down Detection Cable. (It use only Recording Mode)
- (5) Connect the Y/C Separator (VFK0304) to the Extension Cabel (P1002) using the Y/C Separator Connection Cable (VFKS0074).
- (6) When accessing the Recording Mode, connect a jumper between Pin 1 and Pin 2 of P6006 on the Main C.B.A.
- (7) When using the Y/C Separator (VFK0304), connect Pin 4 of P1002 to GND through a resistor (180ohm) to stabilize the video signal.

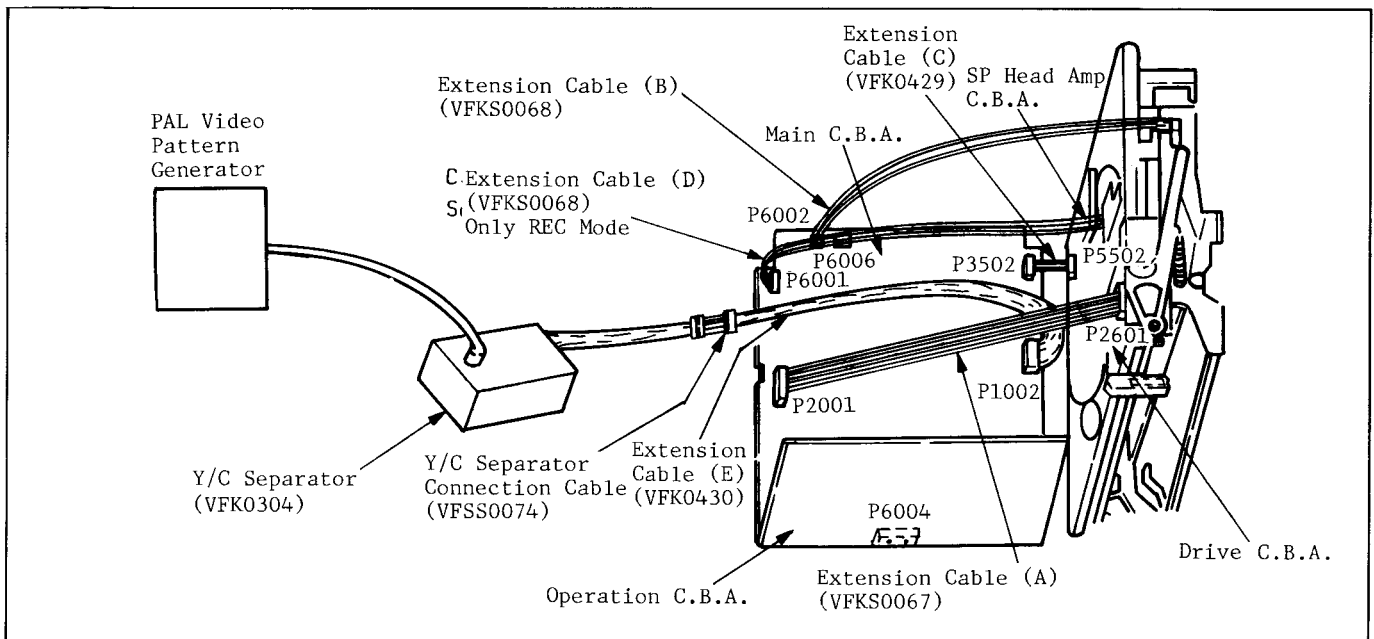


Fig. 2

### 2. Servicing the Camera Section

When servicing the Camera Section, connection of the Extension Cable (F) (VFK0380) and extension Cable (G) (VFKS0060) are necessary as shown in Fig. 3.

- (1) Connects the Extension Cable (F) (VFK0380) between B302 on the Process C.B.A. and B201 on the Sensor C.B.A.
- (2) Connects the Extension Cable (G) (VFKS0060) between BA305 on the Process C.B.A. and Zoom Motor Unit.

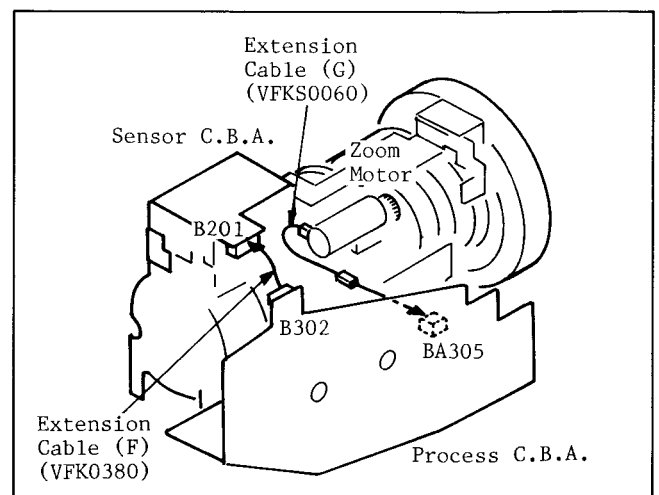


Fig. 3

### 3. How To Use Camera Holder Arm (VFK0431)

This Camera Holder Arm which is adjustable the span must be mounted to VFK0382 (Camera Holder of NV-M5) and it can be used with VFK0432 for camera adjustments or checking for NV-MC10.

- (A) --- VFK0432 Holder Spacer (2pcs.)
- (B) --- VFK0431 Camera Holder Arm
- (C) --- XSN26+18 Screw (2pcs.)
- (D) --- VFK0382 Camera Holder

- (1) Fix the Holder Arm (4) and (5) temporarily by screw (1) as shown in Fig. 4.
- (2) Mount the Camera Holder Arm (B) to the Camera Holder (D) by screws (2) and (3) as shown in Fig. 5.
- (3) Tighten the screws (C) with the Holder Spacers (A) as shown in Fig. 4.

### 4. How To Connect the Y/C Separator and Y/C Separator Connection Cable

When the Y/C Separator Connection Cable (VFKS0074) is used to connect to Y/C Separator the caution should be paid the following items :

\*Cut off the marked portion of Y/C Separator output connector as shown in Fig. 6.

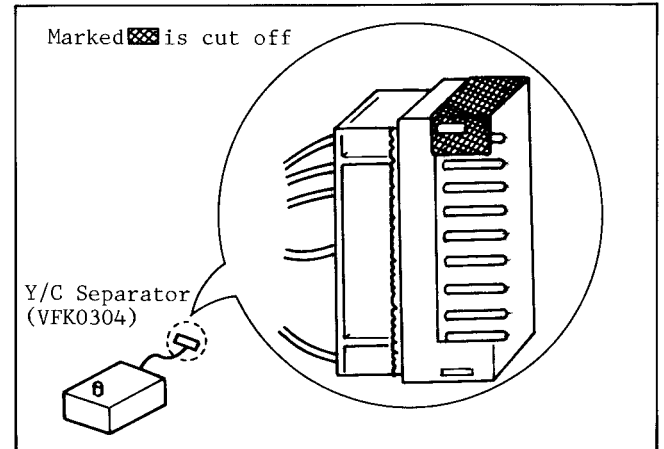


Fig. 6

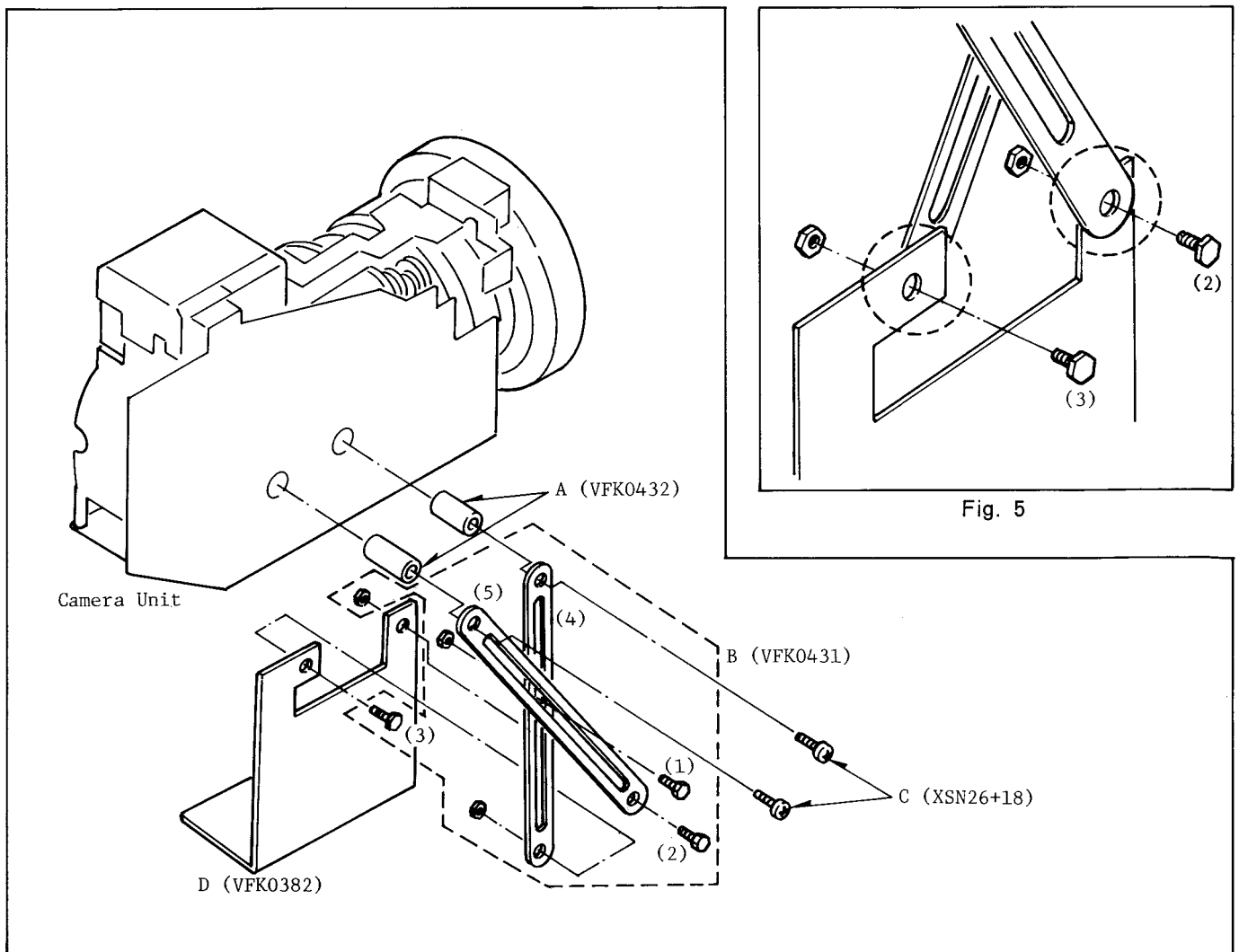


Fig. 4

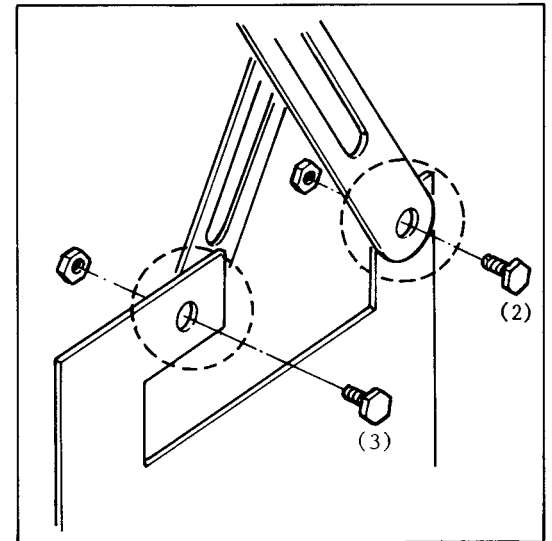


Fig. 5

#### 5. Set Tracking Control to the Fixed position

If the Tracking Control is required to be in the fixed (neutral) position, push both of the tracking Control Up/Down Switches, on the Main C.B.A., in at the same time in Playback Mode.

#### 6. Manual Eject-Tape in and Carriage closed

- (1) Remove Cassette Cover by removing 2 Screws.
- (2) Push on upper end of Lock Lever to release cassette carriage.

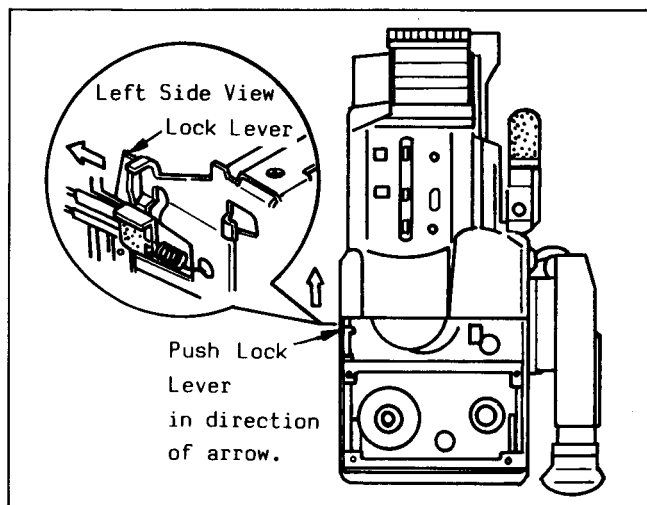


Fig. 7

#### 7. Elimination of Tape slack

Before inserting the Cassette Tape in the VHS-C Movie, take up slack in the tape by turning the Takeup Tape Gear on the side of the Cassette Tape. Turn it in the direction of the arrow until no slack is evident and opposite reel begins to turn.

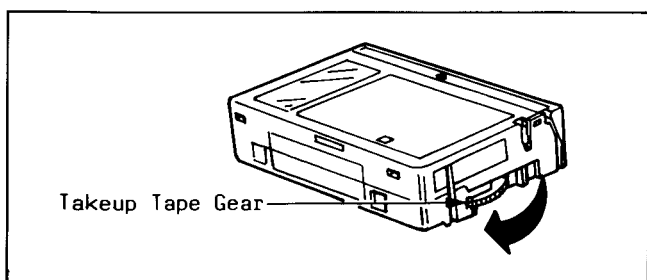


Fig. 8

#### 8. Insertion (or Removal) of cassette Tape

As in Fig. 5, hold the tape vertically with fingers and thumb to insert or remove the tape. (Be sure to eliminate slack before inserting the tape.)

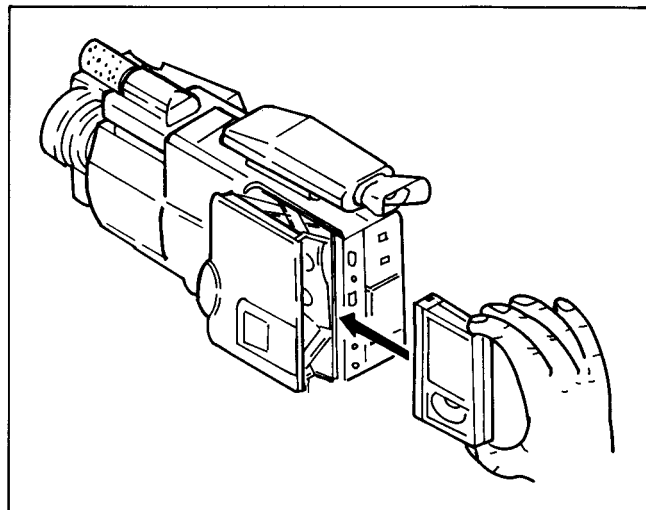


Fig. 9

#### 9. Connection of the Flexible Cables to Trap Connectors

##### a. Removal

1. On the trap Connector, pull out on both ends of the Locking Tab surrounding the cable end to release the Trap on the Connector. Then pull Flexible Cable out to remove as shown in Fig. 6.

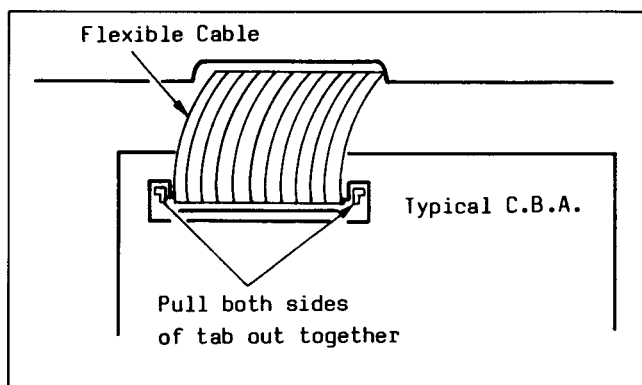


Fig. 10

##### b. Installation

1. Insert the end of the Flexible Cable into the Trap Connector so it lays smoothly across the slot.
2. Press the middle of the cable firmly against the Trap Connector slot, and hold it securely.
3. Without pinching the Cable, press the Locking Tabs in against the Trap Connector until both ends snap into their locked positions.
4. Pull lightly on the Cable to check for positive connection.

##### Note:

- 1) Take care when removing or installing the Flexible Cable to prevent Cable damage.

## 10. Service of Operation Bracket Unit

When removing or reinstalling the Operation Bracket Unit and Switch Cover, first install the Switch Cover over the Operation Key portion (CAMERA MODE) of the Operation Bracket Unit, and then install assembly parts.

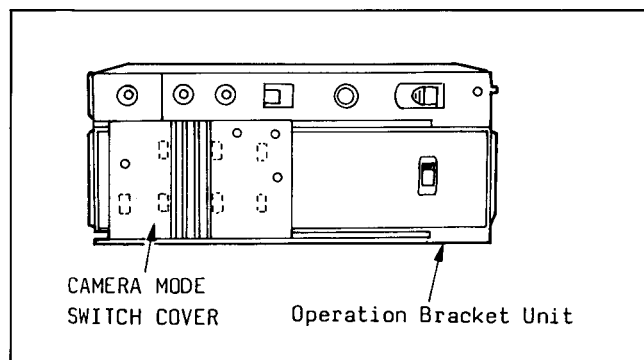


Fig. 11

## 11. How to read the Disassembly/Assembly

(For Cabinet Part)

Step /Loc No.	Part	REMOVAL		
		Fig. No.	Remove *UNLOCK/RELEASE/ UNPLUG/UNCLAMP /UNSOLDER	Note
1 ①	Top Case ③	D2 ⑤	2(S-1), *Connector ⑥	

(For Mechanical Part)

STEP /LOC No.	START-ING No.	PART	REMOVAL		INSTALLATION
			Fig. No.	REMOVE *UNHOOK/UNLOCK/RELEASE	
①	1	GROUNDING PLATE	B M27	*Shield Case-Top, *Connector P13, (S-1)	
②	1	D.D. CYLINDER UNIT	B M27	3(S-2), Connectors	See, Replacement of D.D. Cylinder Unit.
③	3	TAKEUP REEL GEAR	T M26,28	(C-1), <Note 1> (W-1)	(+)
①	②	③	④	⑤	⑥
					⑦

1 : Order of steps in Procedure.

When ressembling, perform the step(s) in the reverse order. These numbers are also used as the identification (Location) No. of parts in Figures.

2 : Starting No. followed by corresponding part which can be removed at this stage.

3 : Part to be removed or installed.

4 : Location of part

T = Top B = Bottom

5 : Fig. No. showing Procedure.

6 : Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.

C = Cut Washer P = Spring

R = Retaining Ring S = Screw

W = Washer

\* = Unhook, unlock or release

3(S-2) = 3 Screws (S-2)

7 : Adjustment information for installation.

# = Condition for adjustment.

(+) = Refer to Exploded Views for Lubrication Information.

\* = Remark



3-11. SENSOR C.B.A. & C.D.S. PACK C.B.A.....	3-31
3-12. E.V.F. SCHEMATIC DIAGRAM.....	3-33
3-13. E.V.F. C.B.A.....	3-35
3-14. VTR OPERATION SCHEMATIC DIAGRAM.....	3-37
3-15. VTR OPERATION C.B.A. ....	3-37
3-16. CAMERA INTERCONNECTION SCHEMATIC DIAGRAM.....	3-39
3-17. SP HEAD AMP SCHEMATIC DIAGRAM.....	3-41
3-18. SP HEAD AMP C.B.A. ....	3-43
3-19. LP HEAD AMP SCHEMATIC DIAGRAM.....	3-45
3-20. LP HEAD AMP C.B.A.....	3-47
3-21. LUMINANCE/CHROMINANCE C.B.A.....	3-49
3-22. LUMINANCE/CHROMINACNE SCHEMATIC DIAGRAM.....	3-53
3-23. POWER SUPPLY/AUDIO/SUB VIDEO SCHEMATIC DIAGRAM.....	3-58
3-24. SERVO SCHEMATIC DIAGRAM.....	3-61
3-25. MAIN (POWER SUPPLY/AUDIO/SUB VIDEO/SERVO/SYSTEM CONTROL) C.B.A.....	3-63
3-26. MAIN (SYSTEM CONTROL/POWER SUPPLY/AUDIO/SUB VIDEO/SERVO) C.B.A.....	3-67
3-27. SYSTEM CONTROL SCHEMATIC DIAGRAM.....	3-71
3-28. DRIVE SCHEMATIC DIAGRAM.....	3-76
3-29. DRIVE C.B.A.....	3-78
3-30. CIRCUIT BOARD LAYOUT.....	3-80
3-31. VTR INTERCONNECTION SCHEMATIC DIAGRAM.....	3-81
3-32. ICs & TRs INFORMATION.....	3-84
<b>SECTION 4 EXPLODED VIEWS &amp; PARTS LIST.....</b>	<b>4-1</b>
4-1. EXPLODED VIEW.....	4-1
1. VTR MECHANISM SECTION.....	4-1
2. CAMERA LENS SECTION.....	4-2
3. CHASSIS & FRAME SECTION.....	4-3
4. E.V.F. SECTION.....	4-4
5. PACKING PARTS SECTION (NV-MC10B/EN/A/EM/EA/EP).....	4-5
6. PACKING PARTS SECTION (NV-MC10EG/E).....	4-6
<b>MECHANICAL REPLACEMENT PARTS LIST</b>	
<b>ELECTRICAL REPLACEMENT PARTS LIST</b>	

# SECTION 1

## GENERAL DESCRIPTION

### 1. HOW TO USE VHS-C MOVIE

#### 1-1. FEATURES

##### 1. Piezo Auto Focus

The focus is always automatically and precisely adjusted under all shooting situations. There is no need to manually adjust the focus; manual focus adjustment is also possible.

##### 2. LP Mode for Doubled Recording Time

It extends the maximum recording time to a full 1 hour.

##### 3. Cue & Review Playback

Convenient for fast-forwarding or rewinding the tape while watching the picture.

##### 4. Compact, Lightweight and Super-Portable

With a weight of only 1.22kg, the VHS-C Movie is handy to use and carry along.

##### 5. 3-Way Power Supply

The VHS-C Movie can be operated on 3 different power sources; rechargeable battery pack, AC adaptor or car battery cord.

##### 6. Auto White Balance

The white balance is fully automatically adjusted and continuously readjusted to any changes in illumination during shooting. Manual adjustment is also possible.

##### 7. Alarm Indications

Various warning indications prevent operating mistakes and always assure successful results.

##### 8. 6× Power Zoom Lens

Powerful, smooth zooming between wide-angle and telephoto is simple with convenient push-button control.

##### 9. High Speed Shutter Function

This function makes it possible to catch even super-fast action with sharp contours and amazing detail.

##### 10. Audio Dubbing Function

The Audio Dubbing function allows replacing the originally recorded sound with narration, back-ground music or special sound effects.

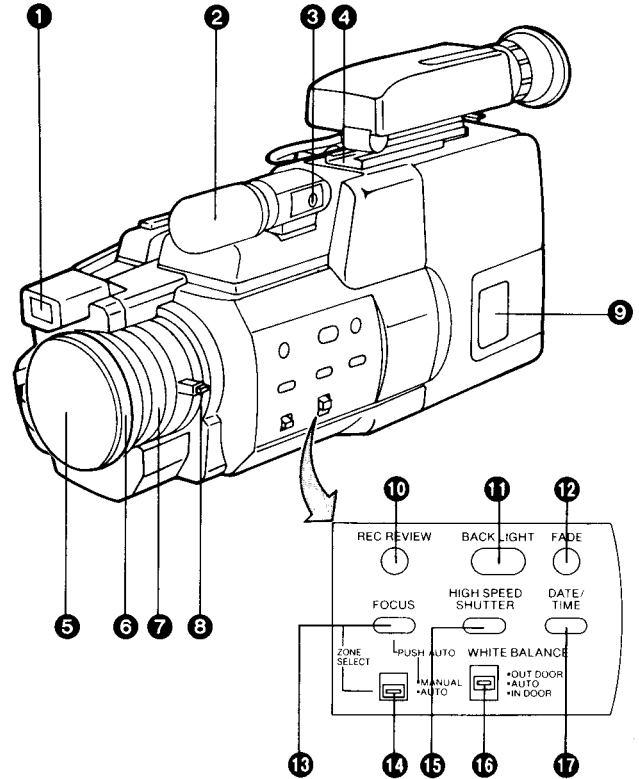
##### 11. Insert Editing

Insert Editing (or Insert Recording) is handy for editing tapes by inserting new scenes into an already recorded video tape.

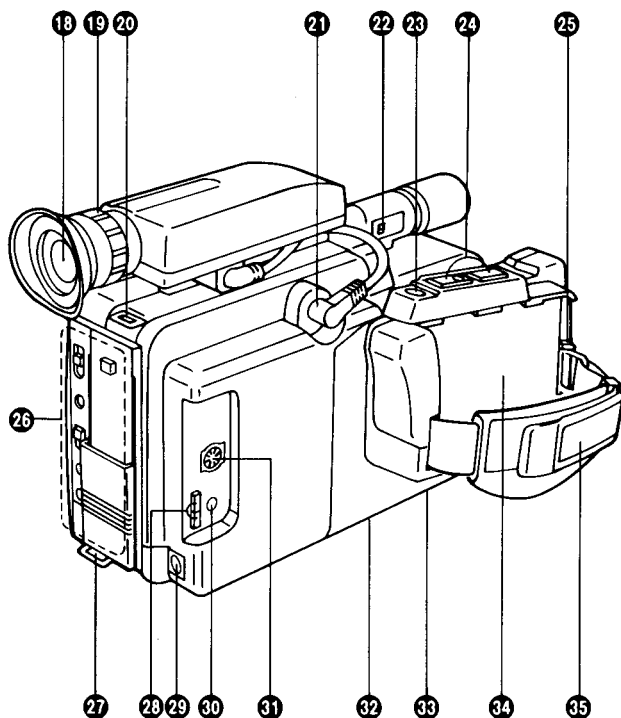
##### 12. HQ (High Quality) Picture System

Video recorders carrying the HQ symbol mark feature the new VHS High Quality Picture System. This system assures complete compatibility with VTRs that use the conventional VHS system.

#### 1-2. CONTROLS AND COMPONENTS

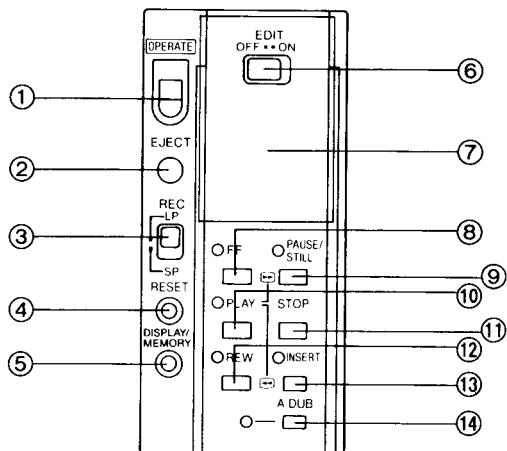


- ① White Balance Sensor Window
- ② Built-in Microphone
- ③ External Microphone Socket
- ④ Accessory Shoe
- ⑤ Lens Cap
- ⑥ Lens Hood
- ⑦ Focus Ring
- ⑧ Manual Zoom Lever with Macro Button
- ⑨ Cassette Compartment
- ⑩ Rec Review Button
- ⑪ Back Light Button
- ⑫ Fade Button
- ⑬ Focus Adjusting Button/Zone Selector
- ⑭ Focus Mode Selector
- ⑮ High Speed Shutter Selector
- ⑯ White Balance Mode Selector
- ⑰ Date/Time Selector



- 18 Electronic Viewfinder
- 19 Eyepiece Corrector Control
- 20 Metal Fitting for Shoulder Strap
- 21 EVF Terminal
- 22 Microphone Sensitivity Selector
- 23 Start/Stop Button
- 24 Power Zoom Control Buttons
- 25 Battery Locking Lever
- 26 General Operation Controls
- 27 Metal Fitting for Shoulder Strap
- 28 Tracking Up/Down Buttons
- 29 DC Input Socket
- 30 Remote Control Socket
- 31 Adaptor Socket
- 32 Tripod Receptacle
- 33 Battery Compartment for Auto Date/Clock
- 34 Battery Holder
- 35 Grip Belt

## 26 General Operation Controls

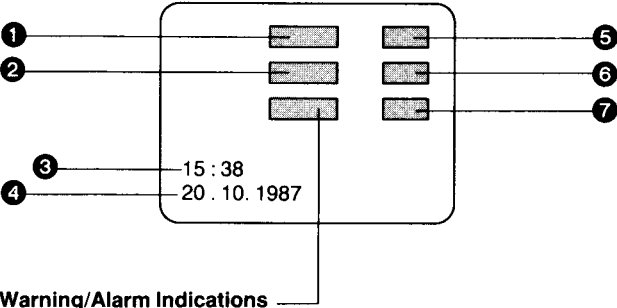


- 7 Function of the Camera/VTR Operation Selector Cover**  
 Before starting camera recording, slide this cover close to conceal the Tape Running Buttons and render them inoperative.  
 For playback, audio dubbing, tape copying and other VTR operations, slide this cover up. This renders the Start/Stop Button and other operation controls for camera recording inoperative.

- 1 Operation On/Off Switch
- 2 Eject Button
- 3 Recording Speed Selector
- 4 Reset Button
- 5 Display Button
- 6 Edit Switch
- 7 Camera/VTR Operation Selector Cover
- 8 Fast Forward/Cue Button
- 9 Pause/Still Button
- 10 Play Button
- 11 Stop Button
- 12 Rewind/Review Button
- 13 Insert Button
- 14 Audio Dubbing Button

1-3. ELECTRONIC VIEW FINDER

The following indications are displayed in the Electronic Viewfinder (EVF) to inform you of the operating conditions of the VHS-C Movie.



Warning/Alarm Indications

- BATT** There is little battery power left. The VHS-C Movie will be turned off in a few minutes. Replace the battery pack by a fully recharged one.
- TAPE** It is impossible to record because the erasure prevention tab of the cassette is not intact.
- END** The tape has almost reached its end. Replace the tape with a new one.
- DEW** When condensation has formed inside the VHS-C Movie, the "DEW" indication will flash and a few seconds later, the unit will turn itself off.

1 Remaining Battery Power Indication

E---F The "---" indications begin to disappear from right to left as the power of the battery pack weakens.

2 Counter Indication

M0123 Tape Counter  
1 2 :34 Lap Time Counter

3 Clock Indications

4 Date Indications

5 Recording/Insert Indication

REC Recording  
--- Recording Pause  
INST Insert  
--- Insert Pause

6 Recording Mode Indication

SP SP mode  
LP LP mode

7 Manual White Balance Indication

OUT OUTDOOR  
IN INDOOR

High Speed Shutter Mode Indication

1/500 1/500 sec.  
1/1000 1/1000 sec.

Some of the above indications may light up alternately at the same place in the EVF to indicate the corresponding operating condition or warning.

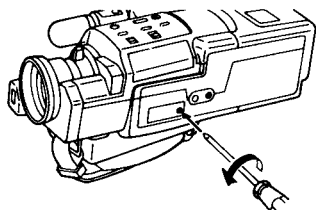
1-4. VHS-C MOVIE SYSTEM ACCESSORIES


CAUTION: TO PREVENT FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

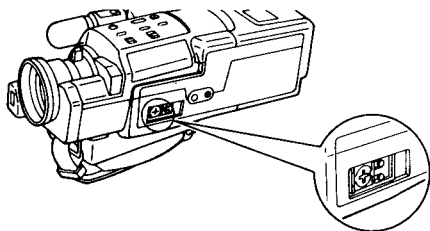
## 1-5. SETTING OF THE DATA AND CLOCK & RECORDING THE DATE/CLOCK INDICATIONS

### How to Insert the Battery for the Clock Operation

- 1 Remove the lid on the bottom of the VHS-C Movie with a (+) screwdriver.



- 2 Insert the "LR1130" size battery with the polarities (⊕ and ⊖) aligned correctly and then replace the lid.
  - The clock starts working as soon as the battery is inserted.

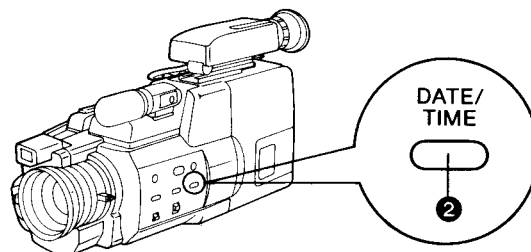
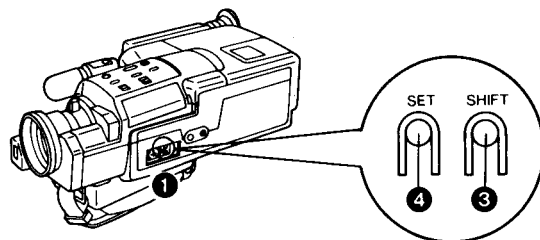


The "LR1130" size battery (supplied) is necessary for the operation of the built-in digital clock, and to memorize the Date/Clock and the Tape Counter Indications when the VHS-C Movie is turned off.

### CAUTION FOR BATTERY REPLACEMENT

- The life of the battery is about one year, however, it depends on the frequency of use. Inspect and if necessary, replace the battery once a year.
- Load the new battery with their polarities (⊕ and ⊖) aligned correctly.
- Do not apply heat to battery, or internal short-circuit may occur.
- Remove spent battery immediately and dispose of it.

### Setting of the Date and Clock



- 1 Open the lid of the Battery Compartment.

- 2 When the Date/Time Selector is pushed, the indication shown on the right will appear in the EVF.

0:12  
1. 1. 1987

- If no battery is inserted, the indication "PLEASE SET BATTERY" will light up. In this case, insert the battery.

- 3 When the Shift Button is pushed, the flashing portion will be changed in the following sequence.

Year → Month → Date → Hour → Minute

- 4 When the Set Button is pushed, the flashing portion displayed will be changed in the following sequence.

YEAR: 1987 → 1988 → ..... → 2086  
MONTH: 1 → 2 → ..... → 12  
DATE: 1 → 2 → ..... → 31  
HOUR: 0 → 1 → ..... → 23  
MINUTE: 00 → 01 → ..... → 59

- Repeat procedures 3 and 4 until all five items have been set.
- Once the time and date are set, press the Shift Button in response to a precise time signal so that the clock may begin to function.

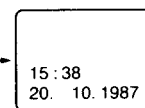
### Recording the Date/Clock Indications

When the Date/Time Selector is pushed repeatedly, the indication will change in the following sequence.

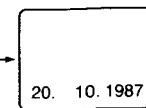
To record neither the Date nor the Clock Indication:



To record the Date and Clock Indications:



To record only the Date Indication:



## SECTION 2

### ADJUSTMENT PROCEDURES

#### 2-1. DISASSEMBLY METHOD

#### 2-1-2. VTR SECTION

##### 2-1-1. DISASSEMBLY FLOW CHART

This flow chart indicates the disassembly steps of the cabinet parts and the P.C. Boards in order to gain access to item(s) to be serviced. When re-assembling, perform the step(s) in the reverse order.

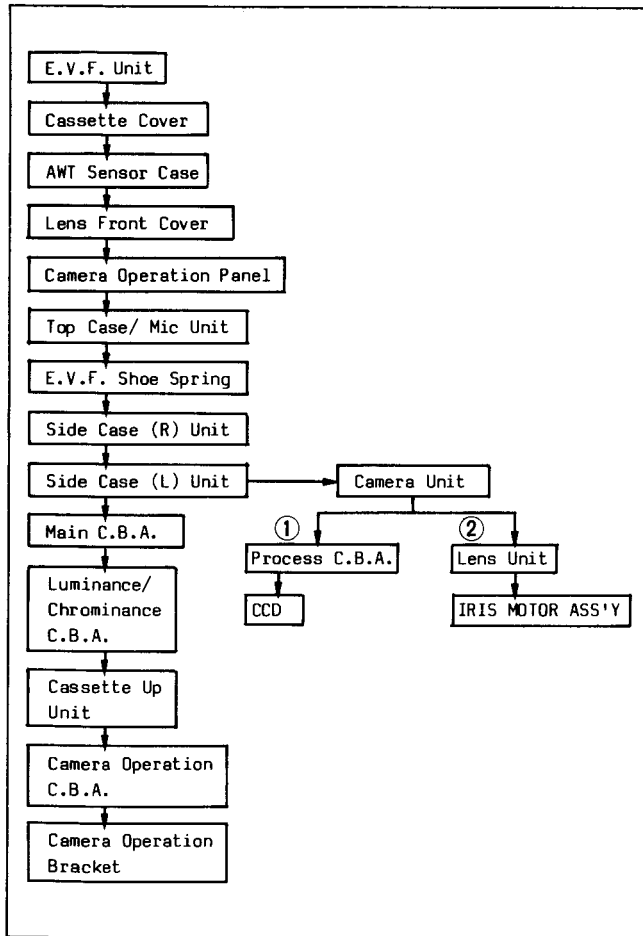


Fig. D1

**Note:**

- a. When removing the cabinet, work with care so as not to break the locking Portions.
- b. Place a cloth or some other soft material under the P.C. Boards or Unit to prevent damage.
- c. When reinstalling, ensure that the connectors are connected and electrical components have not been damaged.
- d. Do not supply power to the Unit during disassembly.

Step /Loc No.	Part	REMOVAL		
		Fig. No.	Remove *UNLOCK/RELEASE/ UNPLUG/UNCLAMP /UNSOLDER	Note
①	E.V.F. Unit	D2	*Connector	1
②	Cassette Cover	D2	2(S-1),	
③	AWT Sensor Case	D3	2(S-2)	
④	Lens Front Cover	D3	(S-3)	
⑤	Camera Operation Panel	D2	2(S-4)	
⑥	Top Case/ MIC Unit	D4	2(S-5), *Connector, *Locking Portions	2
⑦	E.V.F. Shoe Spring	D4	(S-6)	3
⑧	Side Case (R) Unit	D4, D5	2(S-7), (S-8), 3(S-9), *Connectors	
⑨	Side Case (L) Unit	D6	2(S-10), (S-11), *Connectors	
⑩	Main C.B.A.	D7	3(S-12), (L-1), *Connectors	4
⑪	SP Head Amp C.B.A.	D7	(S-13), (S-14), *Connector, spacer	
⑫	Luminance/ Chrominance C.B.A.	D7, D8	*(L-2), (L-3), *Connectors *U-Notches	5
⑬	Cassette Up Unit	D9	2(S-15)	6

Step /Loc No.	Part	REMOVAL		
		Fig. No.	Remove *UNLOCK/RELEASE/ UNPLUG/UNCLAMP /UNSOLDER	Note
14	Camera Operation C.B.A.	D6	(S-16), Connectors	
15	Camera Operation Bracket	D6	-----	7

List of Abbreviations:  
 2(S-1) = 2 Screws (S-1), (L-1) = Locking Tab (L-1)

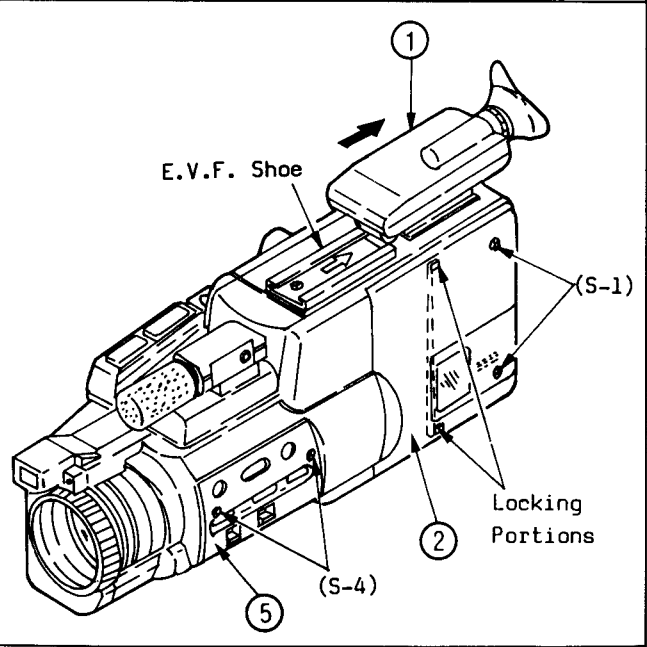
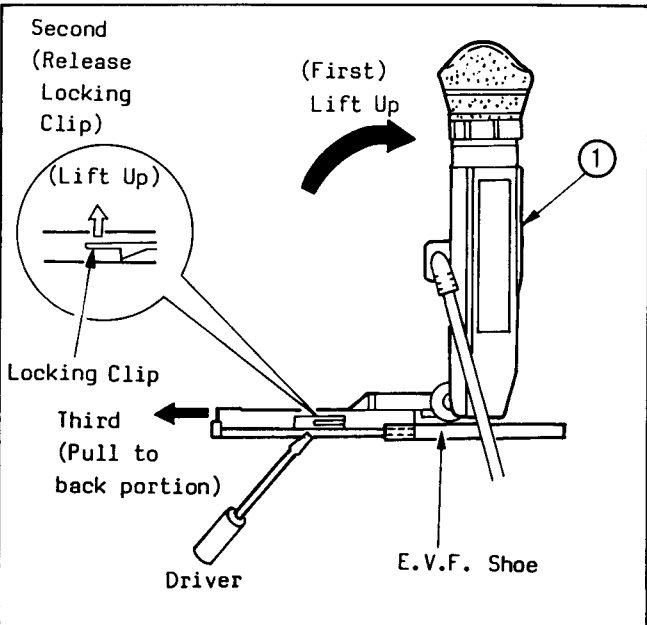


Fig. D2

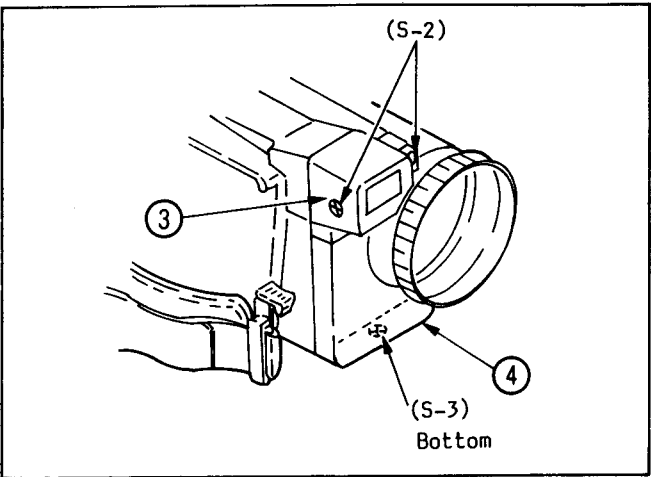


Fig. D3

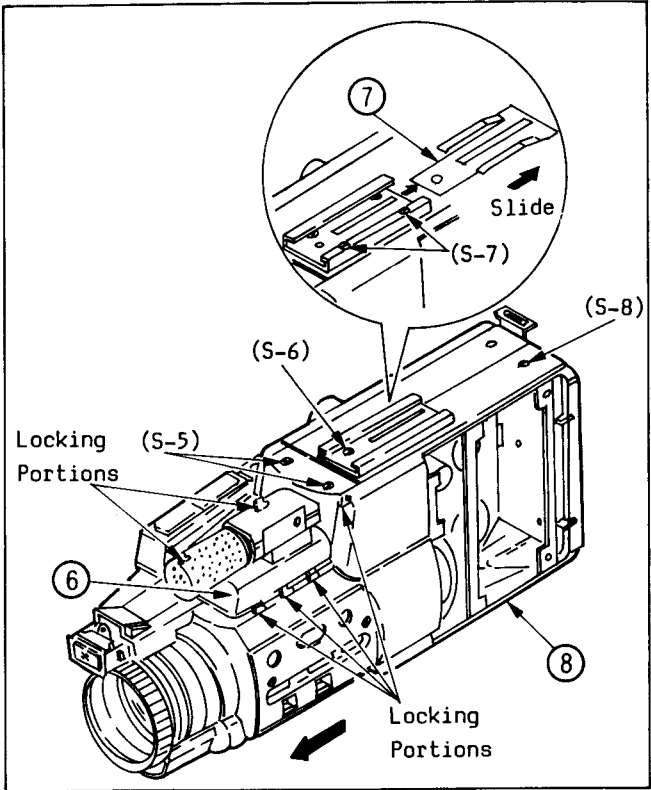


Fig. D4

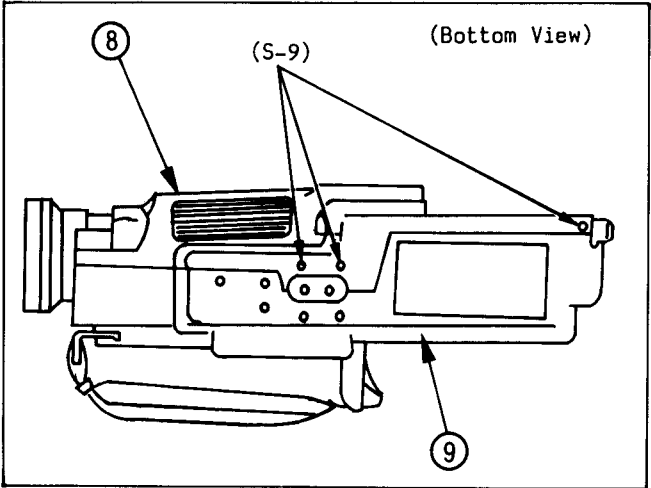


Fig. D5

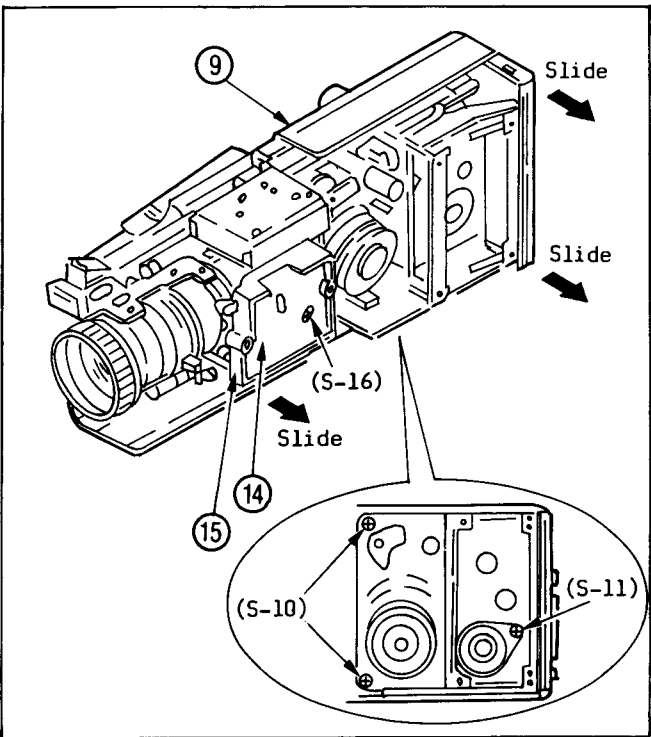


Fig. D6

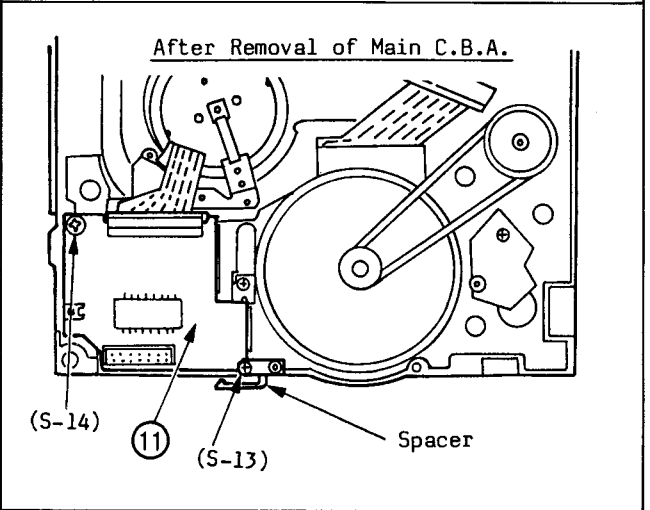
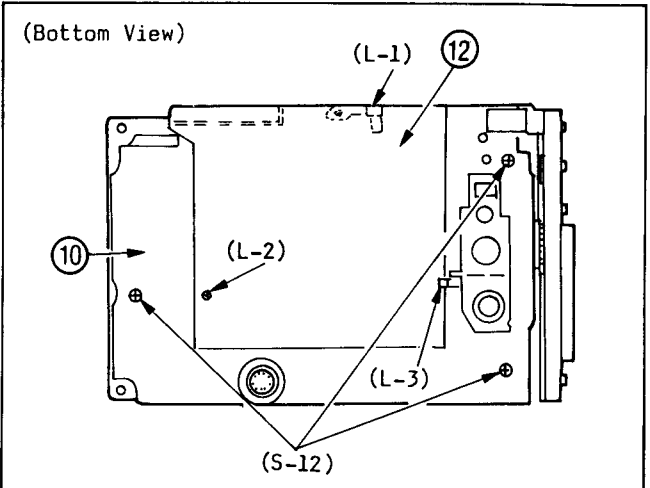


Fig. D7

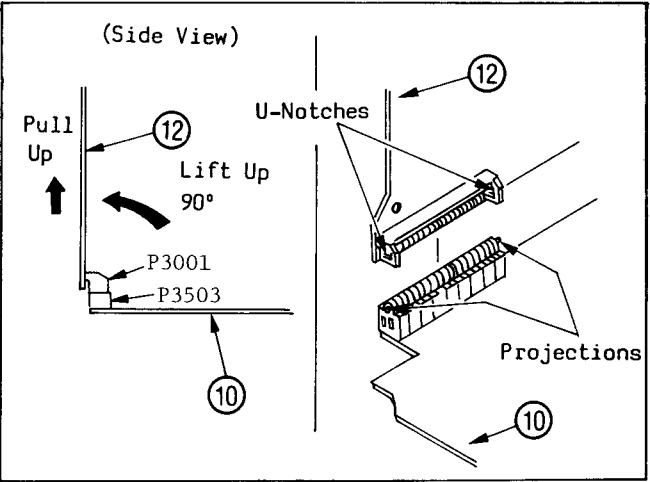


Fig. D8



- Reference <
1. In rear
  2. Slide rem
  3. After Shoe
  4. When Amp
  5. (Rem
  6. 1) s
  7. 1) V



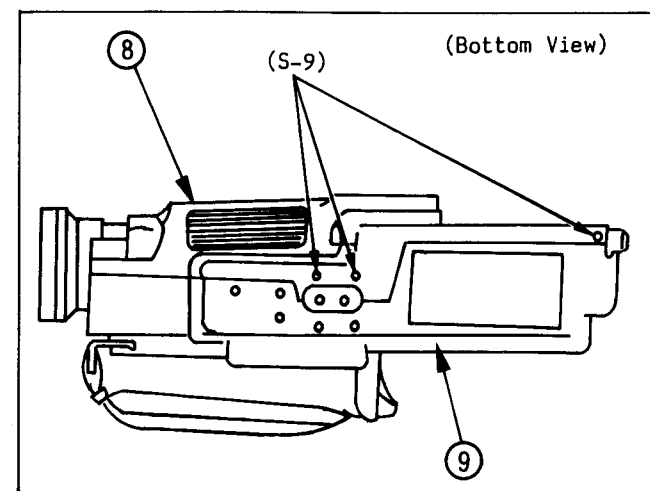
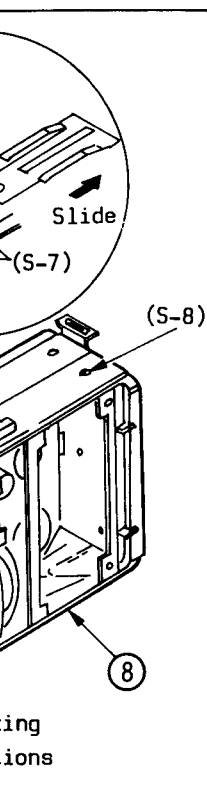
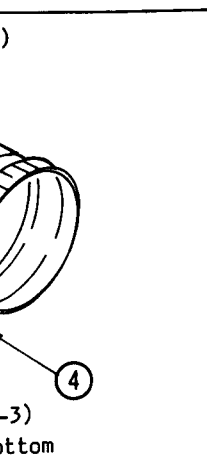


Fig. D5

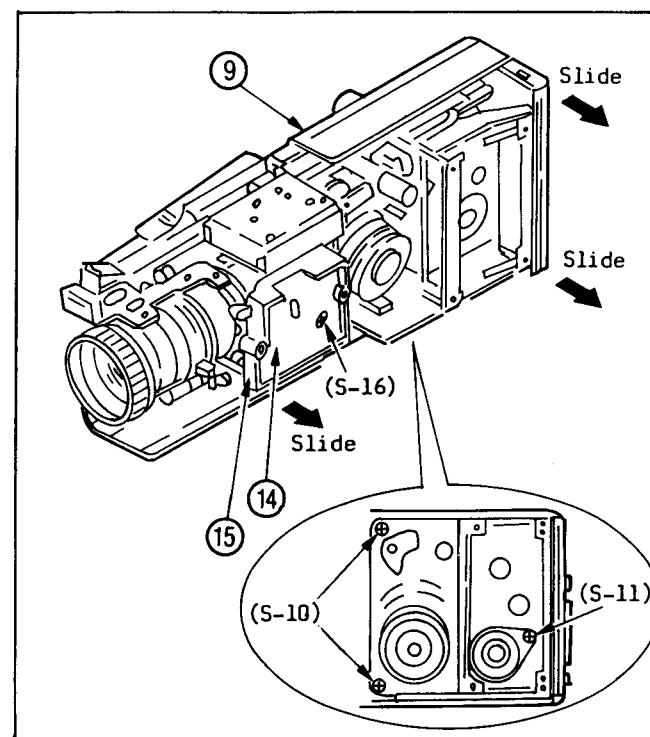


Fig. D6

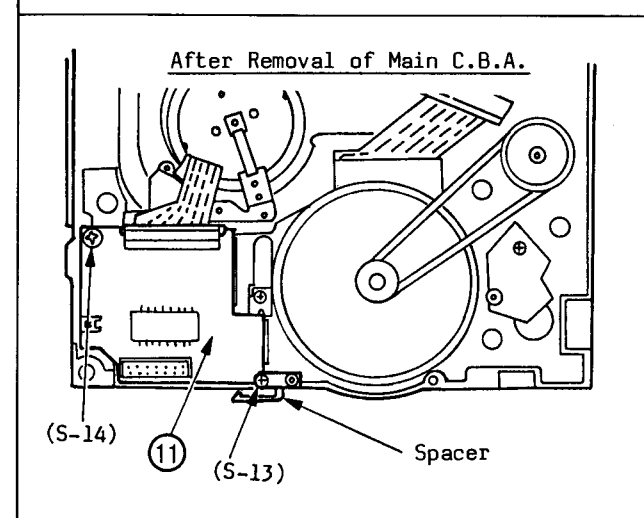
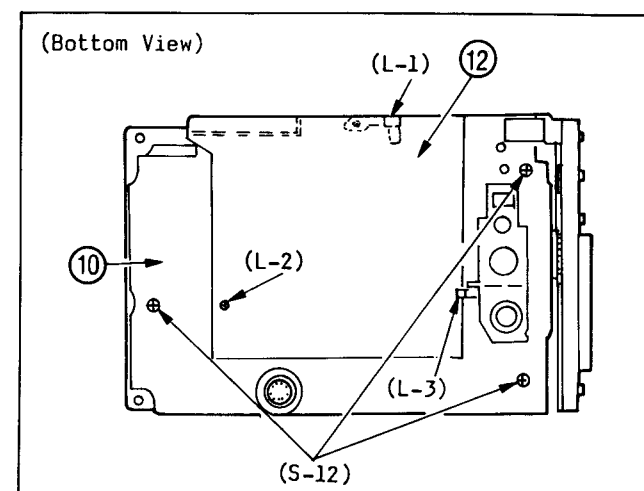


Fig. D7

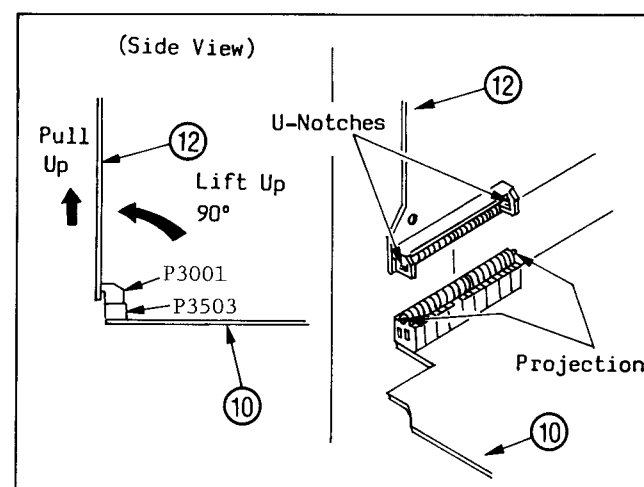


Fig. D8

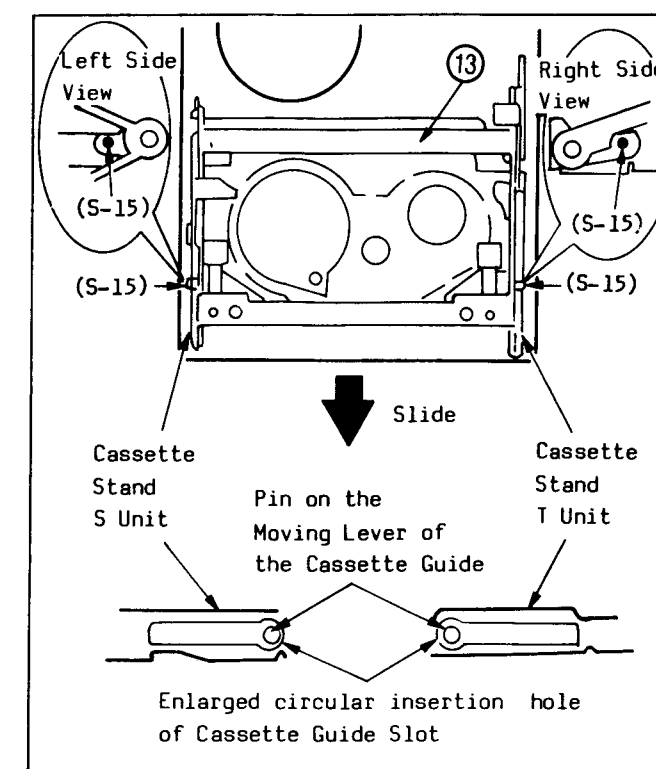


Fig. D9

Reference <Notes> in Table 2-1:

1. In Fig. D2, slide the E.V.F. Unit to the rear as shown by the arrow.
2. Slide the top Case to the front portion to remove as shown by the arrow.
3. After removing Screw (S-6), slide the E.V.F. Shoe Spring to the rear as shown in Fig. D4.
4. When opening the Main C.B.A., hold the Head Amp I Ass'y downward to prevent the P.C.B. from cracking and the screw from loosening.
5. (Removal of Luminance/Chrominance C.B.A.)
  - 1) Release 2 Locking Tabs (L-2) and (L-3) in Fig. D7. And place the Luminance/Chrominance C.B.A. as shown in Fig. D8.
  - 2) Pull Luminance/Chrominance C.B.A. in the direction indicated by the arrow.
    - \*Do not pull Luminance/Chrominance C.B.A. when C.B.A.'s are not placed horizontally.
6. 1) The 2 Screws (S-15) are located on the side of the Cassette Up Unit.
  - 2) Slide the Cassette Up Unit in direction of arrow and release the pins on the moving Levers of the Cassette Up Unit from the enlarged circular insertion hole at end of the Cassette Guide slot.
7. 1) When removing Camera Operation Bracket, slide carefully in the direction shown by the arrow in Fig. D6.

2-1-3. CAMERA SECTION 1

Step /Loc No.	Part	REMOVAL		
		Fig. No.	Remove *UNLOCK/RELEASE/ UNPLUG/UNCLAMP /UNSOLDER	Note
①	Camera Unit	D10, D11	2(S-1), * P304	
②	Process C.B.A.	D11, D13, D14	3(S-2), 2(S-5), Connectors *BA305,*BA301	
③	AF C.B.A.	D12, D14	3(S-3) Connectors *P601, *P602, *P603, *P604	
④	CCD Drive C.B.A.	D13, D15	4(S-4), Sensor Shield Case 2(S-7), Connector *FP201	
⑤	Actuator Ass'y	D13, D16	3(S-6), Sensor Frame(1) 3(S-8)	
⑥	CCD Ass'y	D17	2(S-9)	1

List of Abbreviations:  
2(S-1) = 2 Screws (S-1)

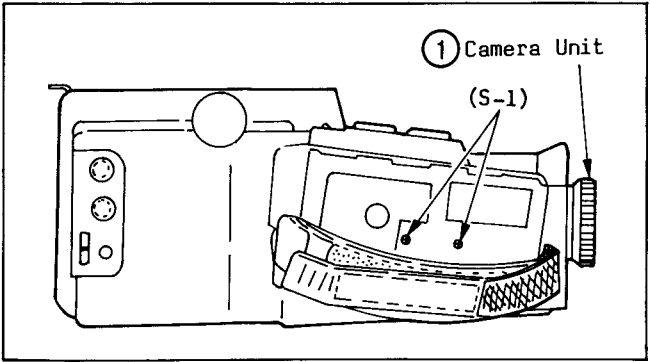


Fig. D10

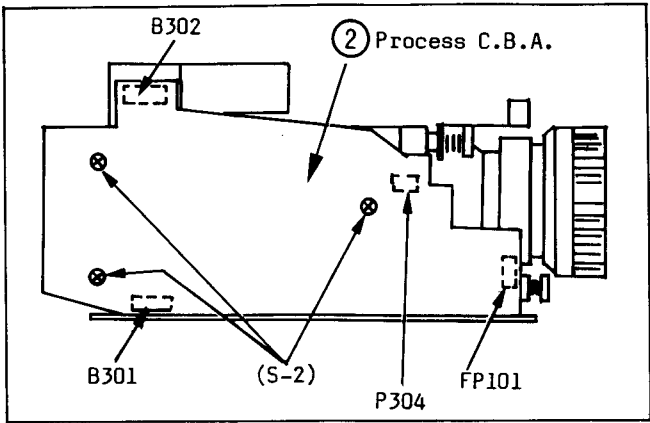


Fig. D11

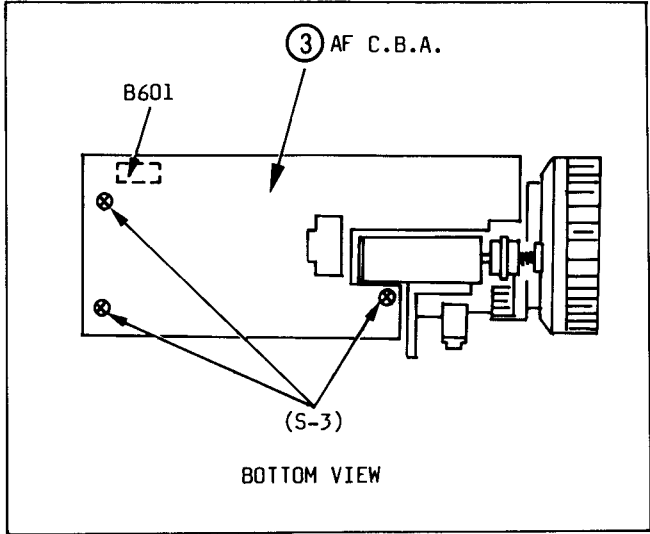


Fig. D12

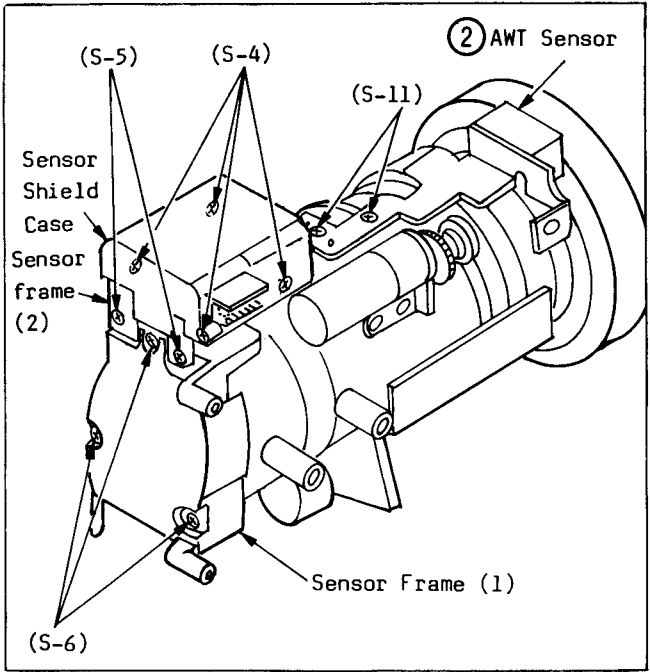


Fig. D13

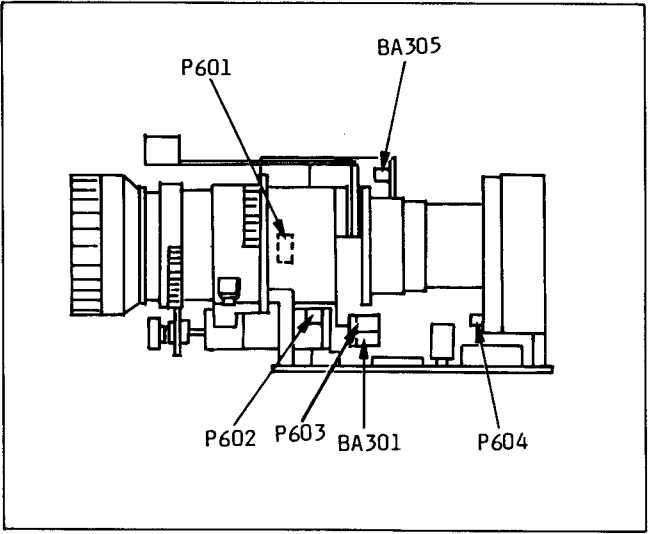


Fig. D14

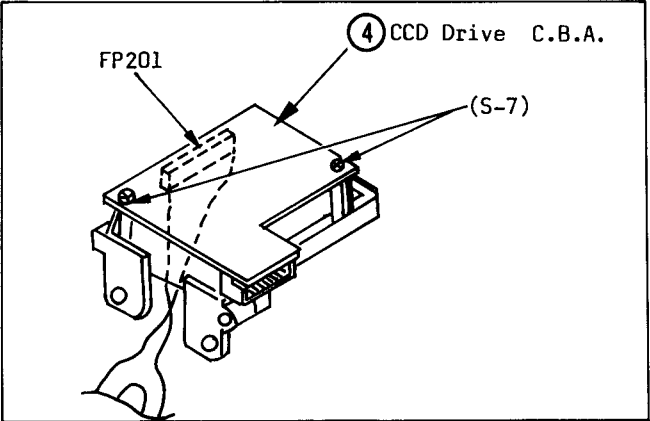


Fig. D15

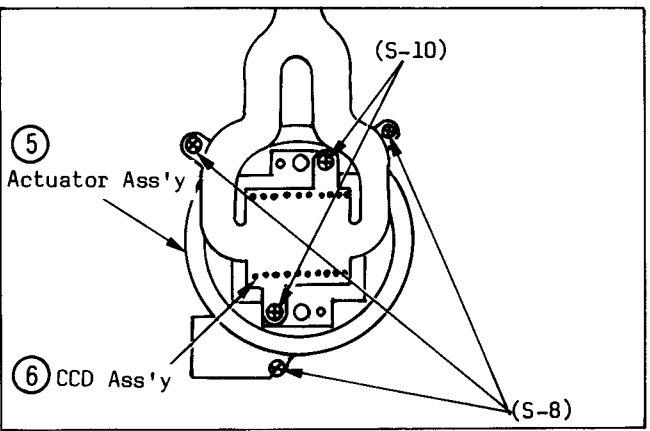


Fig. D16

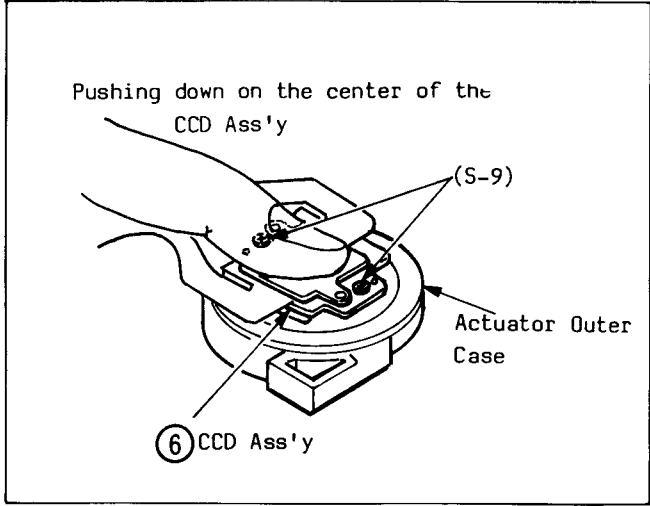


Fig. D17

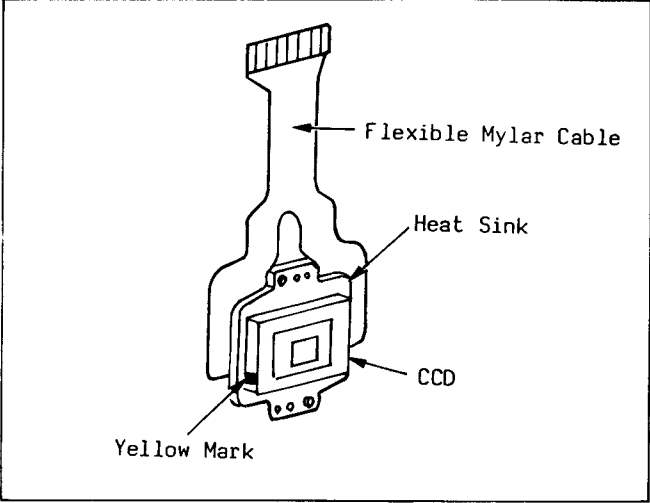


Fig. D18

Reference's <Notes> in Table 2-2:  
(1-1) Put the CCD Ass'y and the Actuator Ass'y on the worktable.  
(1-2) Do not touch the CCD window surface.  
(1-3) Do not touch the Actuator Outer Case during removal or installation of the CCD Ass'y.

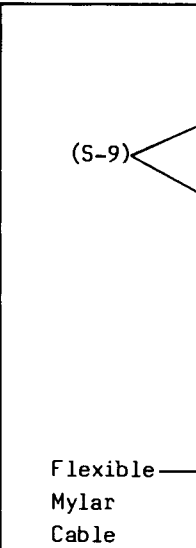
Installation of CCD Ass'y

To complete the reassembly, reverse the previous disassembly steps.

Parts to be replaced related to the CCD Ass'y

The CCD Ass'y, Heat Sink and Flexible Mylar Cable are available. The CCD by itself is not available because it is a part of the CCD Ass'y.

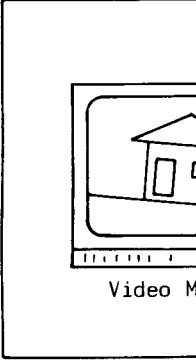
- (1-1) If the CCD is damaged, replace its Ass'y with a new CCD Ass'y.
- (1-2) If the Flexible Mylar Cable or the Heat Sink is damaged, but the CCD is normal, replace the damaged part with a new part. Carefully resolder the lead pins on the CCD. Retighten 2 Screws (S-9) while positioning the CCD in the center of its movable range on Heat Sink.



- (1) Do not apply heat or resoldering.
- (2) After reassembly, reinstall it.
- (3) Position the picture on the picture on the horizontal.
- (4) Check that the picture is horizontal.
- (5) If it is not,

Note:  
There is a Yellow Mark on the cable is located.

[Example]  
If the picture is not horizontal, loosen 2 Screws (S-9) on the picture's (S-10).



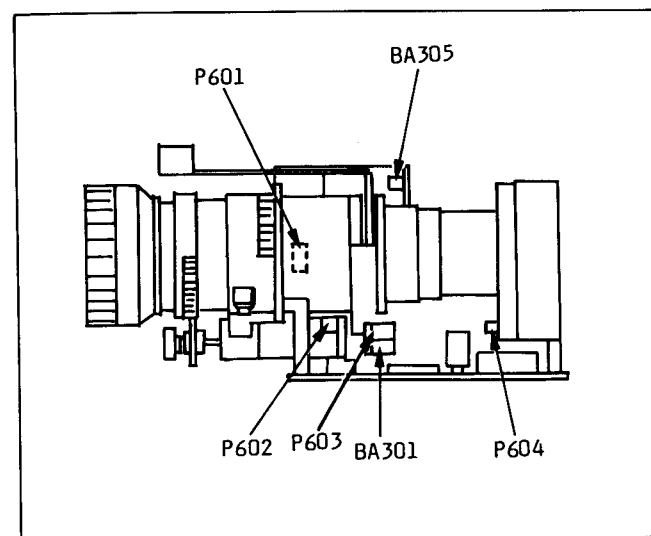
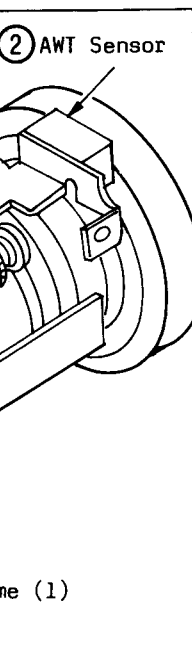
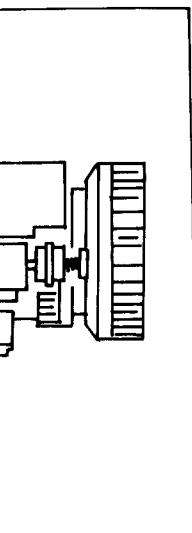
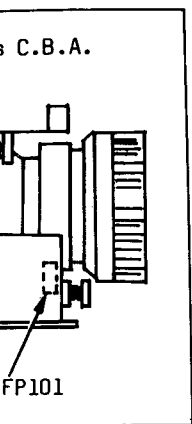


Fig. D14

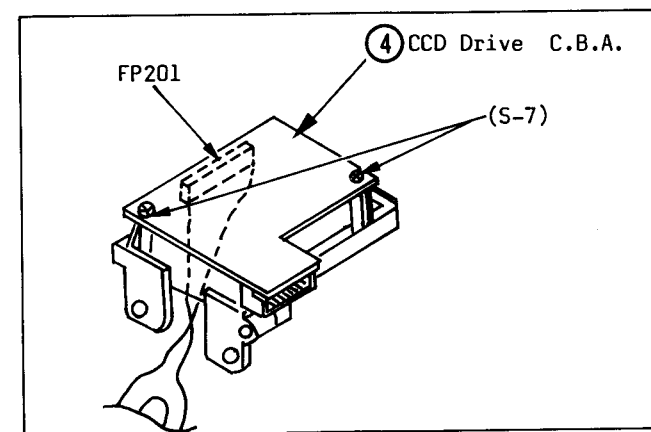


Fig. D15

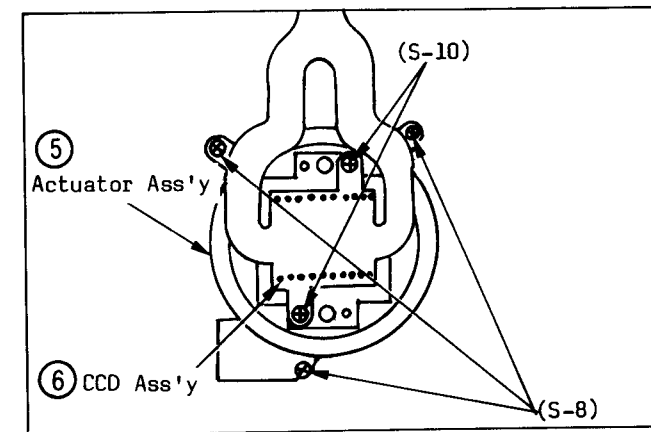


Fig. D16

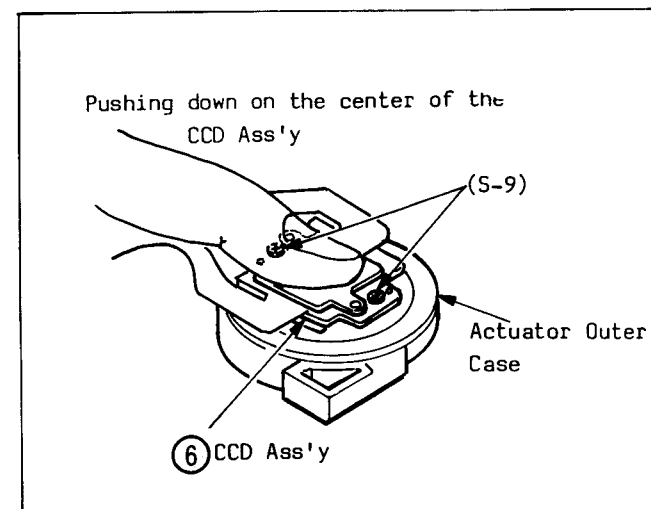


Fig. D17

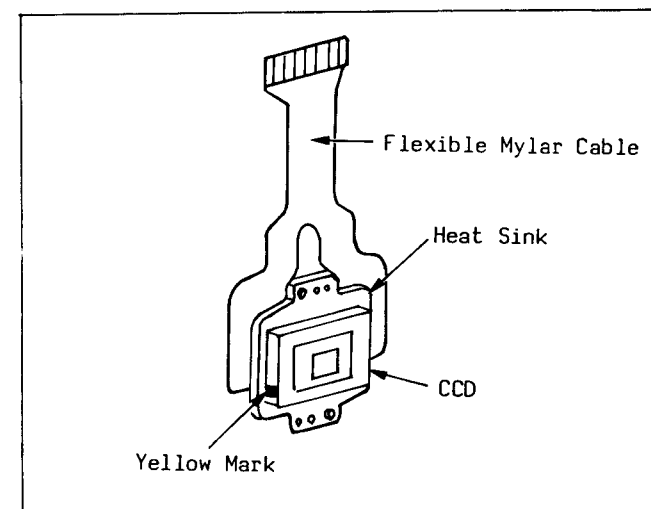


Fig. D18

#### Reference's <Notes> in Table 2-2:

- (1-1) Put the CCD Ass'y and the Actuator Ass'y on the worktable.
- (1-2) Do not touch the CCD window surface.
- (1-3) Do not touch the Actuator Outer Case during removal or installation of the CCD Ass'y.

#### Installation of CCD Ass'y

To complete the reassembly, reverse the previous disassembly steps.

#### Parts to be replaced related to the CCD Ass'y

The CCD Ass'y, Heat Sink and Flexible Mylar Cable are available. The CCD by itself is not available because it is a part of the CCD Ass'y.

- (1-1) If the CCD is damaged, replace its Ass'y with a new CCD Ass'y.
- (1-2) If the Flexible Mylar Cable or the Heat Sink is damaged, but the CCD is normal, replace the damaged part with a new part. Carefully resolder the lead pins on the CCD. Retighten 2 Screws (S-9) while positioning the CCD in the center of its movable range on Heat Sink.

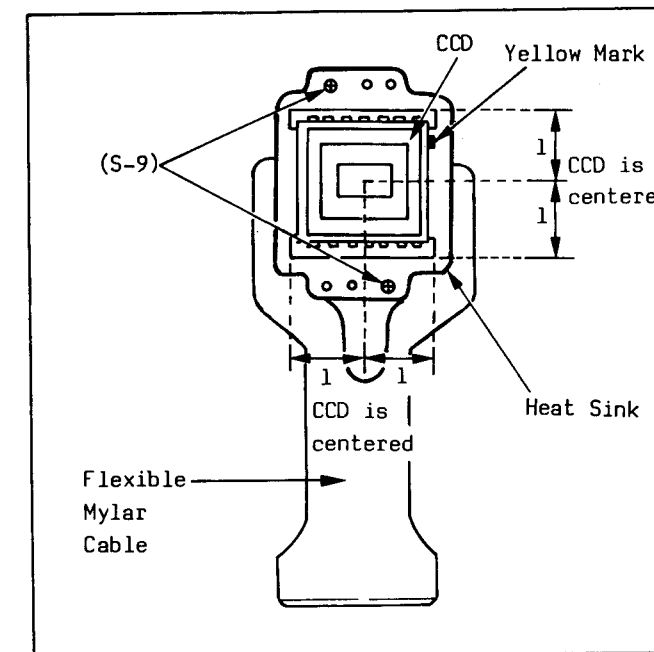


Fig. D19-1

- (1) Do not apply heat to the CCD when unsoldering or resoldering.
- (2) After reassembly of the CCD Assembly, reinstall it in the repaired camera.
- (3) Position the camera horizontally and project a picture on the Video Monitor.
- (4) Check that the picture on the Video Monitor is horizontal.
- (5) If it is not, repeat steps 1-2.

#### Note:

There is a Yellow Mark on the CCD. The Flexible Mylar Cable should be installed so that the cable is located on that side.

#### [Example]

If the picture is tilted down to the right, loosen 2 Screws (S-10), refer to Fig. D16 and D19-2, turn the CCD counterclockwise to correct the picture's tilt and then retighten 2 Screws (S-10).

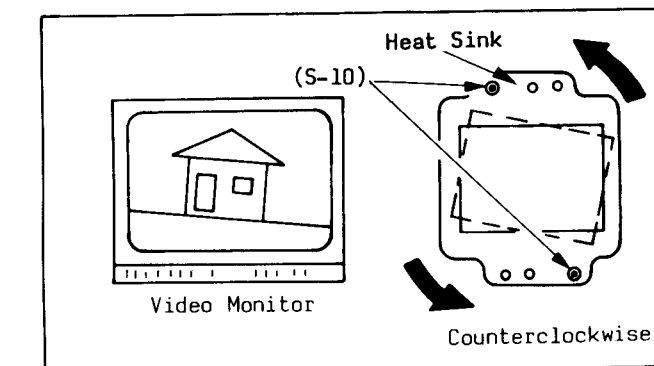


Fig. D19-2

- Note:
- (1) After replacement of the CCD, readjust the following controls.
    - A. BACK FOCUS ADJUSTMENT
    - B. CCD OUTPUT ADJUSTMENT
    - C. BLOOMING (SMEARING) ADJUSTMENT
    - D. AUTO IRIS ADJUSTMENT
    - E. AGC ADJUSTMENT
    - F. PEDESTAL LEVEL ADJUSTMENT
    - G. YH LEVEL ADJUSTMENT
    - H. CARRIER BALANCE AND BLACK PEDESTAL ADJUSTMENT
    - I. WHITE BALANCE ADJUSTMENT
    - J. COLOR PHASE AND R-Y/B-Y GAIN ADJUSTMENT
    - K. HIGH INTENSITY SUPPRESS ADJUSTMENT
    - L. AUTO WHITE BALANCE MODE ADJUSTMENT
    - M. LOW LIGHT INDICATION ADJUSTMENT
    - N. AWT MODE ADJUSTMENT
    - O. H-OSC ADJUSTMENT
    - P. FOCUS ADJUSTMENT
    - Q. CENTERING ADJUSTMENT
    - R. V. SIZE ADJUSTMENT
    - S. BRIGHTNESS ADJUSTMENT
    - T. AF GATE ADJUSTMENT
    - U. F VALUE BIAS GAIN ADJUSTMENT
    - V. AF VALUE FREQUENCY ADJUSTMENT
  - (2) Before reinstalling, clean the IR Cut Filter with Lens Cleaning Materials. If the Crystal Filter Plate is removed from the front of the CCD Assembly, replace it with the IR Cut Section (Blue portion) positioned toward the CCD Ass'y. Ensure that the Filter Rubber is mounted on Item 22 before installation of Item 22.

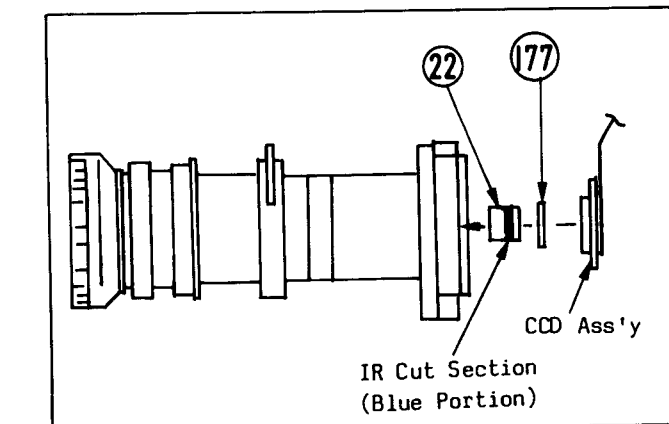


Fig. D20

2-1-4. CAMERA SECTION 2

Step /Loc No.	Part	REMOVAL		
		Fig. No.	Remove *UNLOCK/RELEASE/ UNPLUG/UNCLAMP	Note
①	Zoom Motor/ AF Motor	D21	4(S-1)	
②	AWT Sensor	D13	2(S-11)	
③	IRIS Motor Unit	D22	(S-2)	

List of Abbreviations:  
4(S-1) = 4 Screws (S-1)

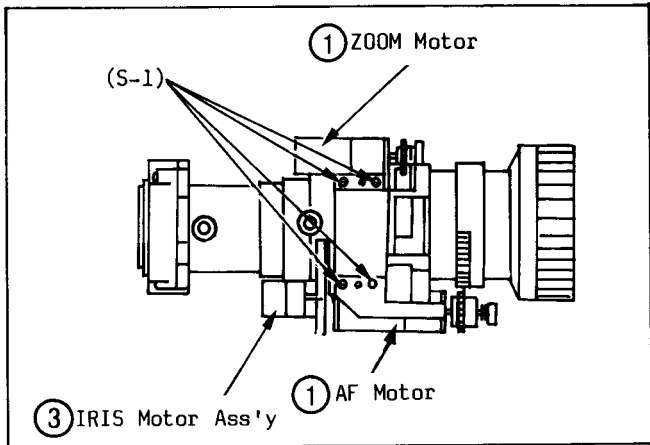


Fig. D21

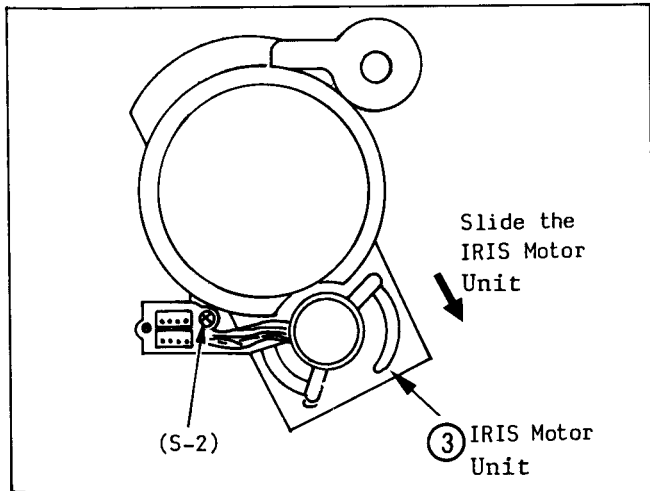


Fig. D22

2-1-5. E.V.F. SECTION

Step /Loc No.	Part	REMOVAL		
		Fig. No.	Remove *UNLOCK/RELEASE/ UNPLUG/UNCLAMP	Note
①	Bottom Case	D23	2(S-1), (S-2) Cable Holder	
②	CRT Ass'y	D24	-----	
③	DY Ass'y	D25	CRT Socket	

List of Abbreviations:  
2(S-1) = 2 Screws (S-1)

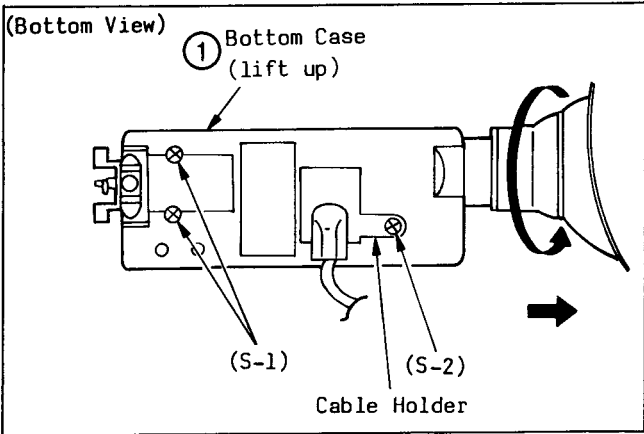


Fig. D23

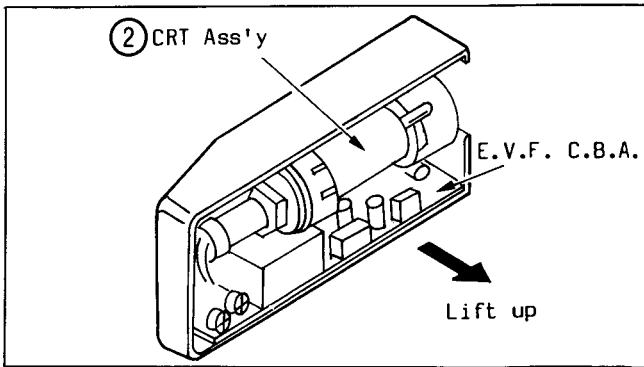


Fig. D24

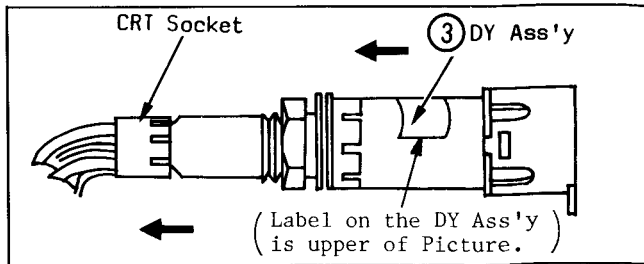


Fig. D25

## 2-2. PROCEDURE FOR CLEANING UPPER CYLINDER UNIT

- (1) Position the Video Head to permit access for cleaning, and hold the Upper Cylinder to keep it from turning while cleaning.
- (2) Gently rub the Video Head in the direction of tape travel with a Head Cleaning Stick (VFK27) moistened with Freon TF.
- (3) Repeat for the other Video Heads.

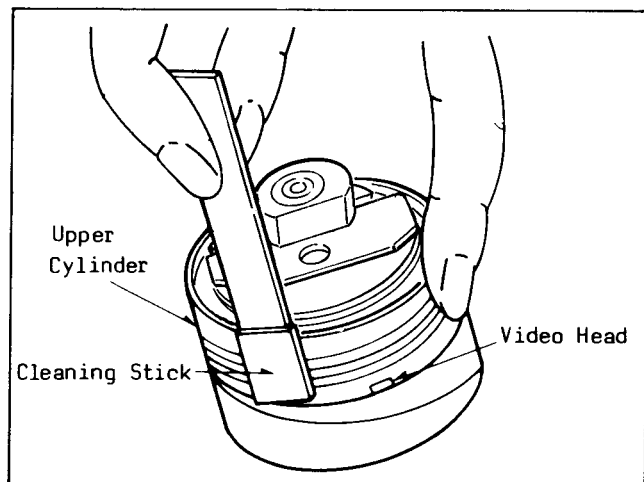


Fig. U1

### Note:

- (1) Do not rub vertically.
- (2) Do not apply any pressure to the head. If the contaminant is not easily removed, continued gentle wiping will usually remove it.

## 2-3. REPLACEMENT AND ADJUSTMENT PROCEDURES

### 2-3-1. REPLACEMENT OF UPPER CYLINDER UNIT

- \* Work with extreme care when removing or replacing the Upper Cylinder Unit.
- \* Do not touch Video Heads and Flying Erase Head.

#### Removal of Upper Rotary Transformer (S) Unit

- (1) Remove 2 screws (A) and Upper Rotary Transformer (S) Unit.

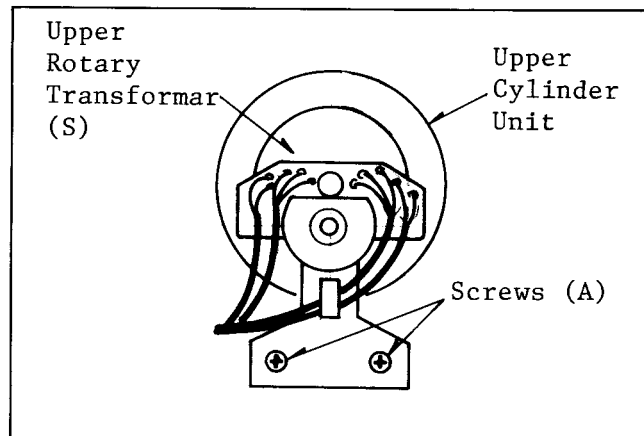


Fig. M1

#### Removal of Rotary Transformer (R) Unit

- (1) Unsolder 8 Lead Pins (B).
- (2) Remove 2 screws (C).
- (3) Remove Rotary Transformer (R) Unit.

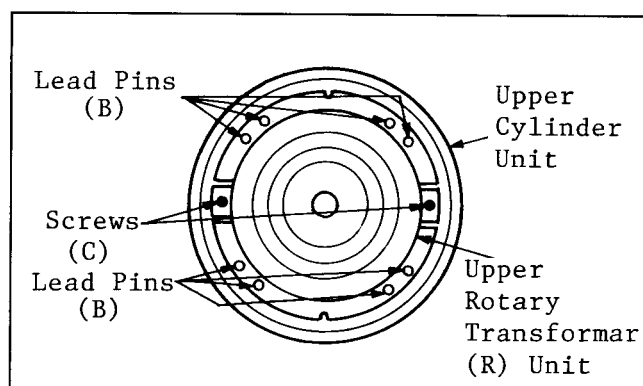


Fig. M2

#### Removal of Upper Cylinder Unit

- (1) Unsolder 10 Lead Pins (D).
- (2) Remove 2 screws (E) and gently lift the Upper Cylinder Unit from the Shaft.

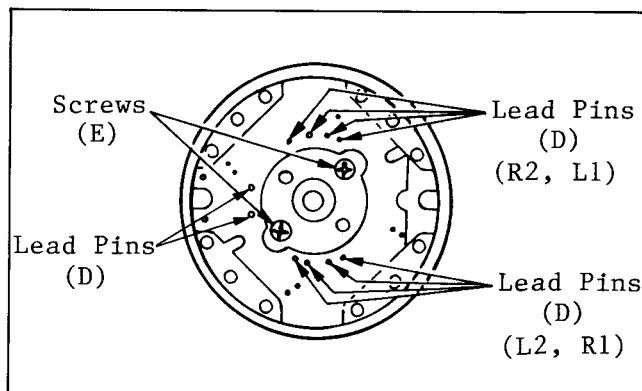


Fig. M3

### Cleaning of D.D. Cylinder Shaft and the surface

- (1) Before reinstalling a new unit, clean the D.D. Cylinder Shaft and the surface that engages with the Upper Cylinder, with a soft cloth dampened with Freon TF in Fig. M4.

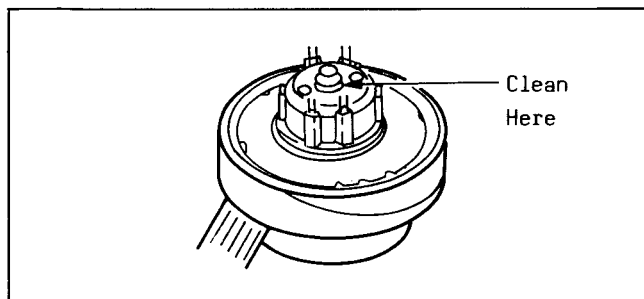


Fig. M4

### Replacement of Upper Cylinder Unit

- (1) Install the new Upper Cylinder Unit carefully so that the white portion of D.D. Cylinder Unit is properly aligned with white portion of Upper Cylinder Unit. For details on the installation position, refer to Fig. M5.
- (2) Tighten the 2 screws (E) and solder 10 Lead Pins (D).

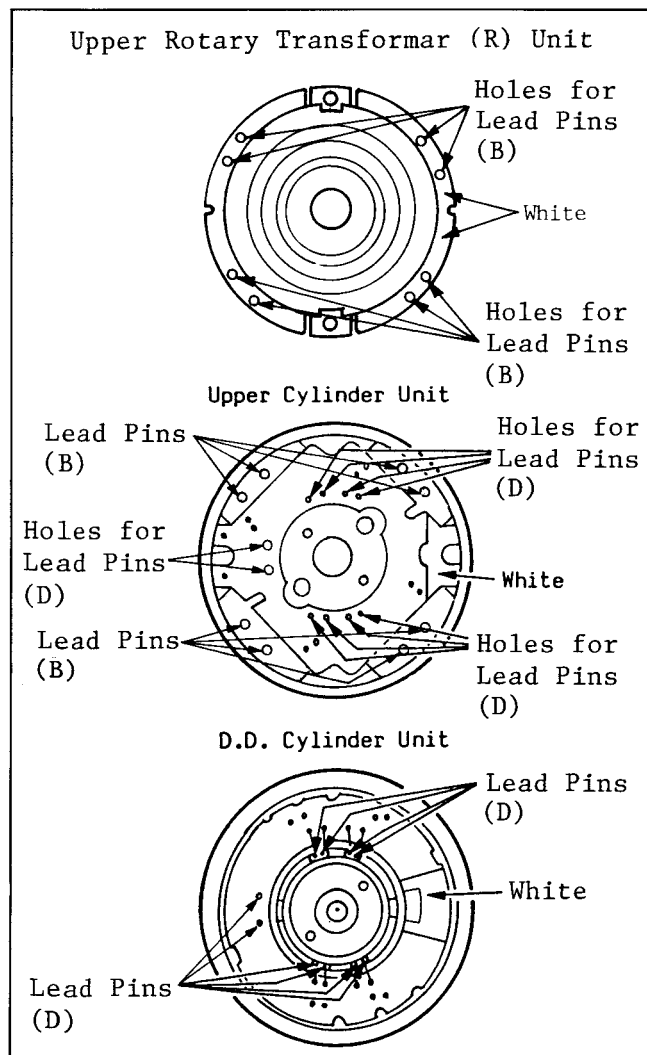


Fig. M5

### Reinstallation of Rotary Transformer (R) Unit

- (1) Reinstall the Rotary Transformer (R) Unit carefully so that the white portion of Upper Cylinder Unit is properly aligned with white portion of Rotary Transformer (R).

- (2) Tighten the 2 screws (C) and solder 8 Lead Pins (B).

### Reinstallation of Upper Rotary Transformer (S) Unit

- (1) Before reinstalling a Upper Rotary Transformer (S) Unit, clean the surface of Rotary transformer (R) and Rotary Transformer (S) with a soft cloth.
- (2) Place the Spacer (Supply with Upper Cylinder Unit) on Rotary Transformer (R). Reinstall the Upper Rotary Transformer (S) Unit so that insert the shaft (Supply with Upper Cylinder Unit) to center of Rotary transformer (S) surely through the center of Upper Rotary transformer (R).

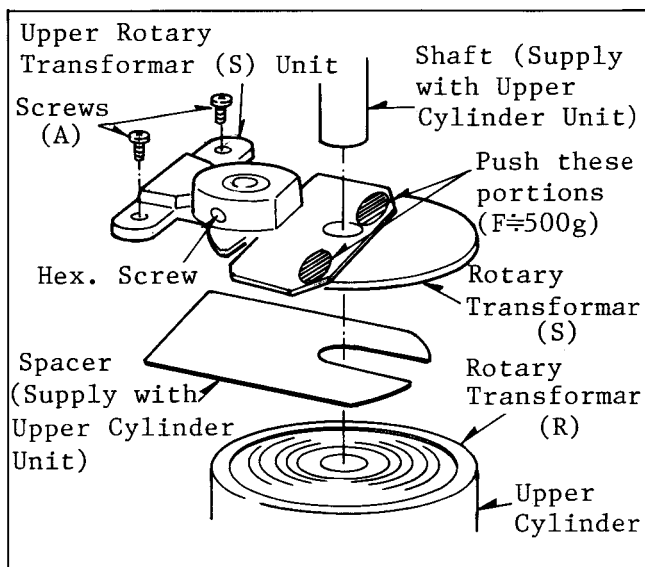


Fig. M6

- (3) Tighten the 2 screws (A).
- (4) Loosen the Hex. Screw (1.2mm).
- (5) Push the Upper Rotary Transformer (S) C.B. (F=500g) and then remove the Shaft and tighten the Hex. Screw.
- (6) Remove the spacer.

### Confirmation of replacement

- (1) Confirm the rotation of Upper Cylinder Unit. (Upper Cylinder Unit rotate smoothly.)
- (2) Insert the Spacer to gap of Rotary Trans. (It must be smoothly also gap must not be too wide.)
- (3) Confirm the selfrecording and Playback picture on LP mode. (Play back picture must not noisy)
- (4) If condition is no good, review the item No.6 Reinstallation of Upper Rotary Transformer (S) Unit.
- (5) After confirmation, perform "TAPE INTERCHANGEABILITY ADJUSTMENT."

### 2-3-2. REPLACEMENT OF CYLINDER UNIT

Work with extreme care when removing or replacing the D.D. Cylinder Unit. Do not touch Video Heads during servicing.

- (1) Remove the Upper Rotary Transformer (S) Unit.
- (2) Unlock Flexible Cables P13 on the Head Amp I Ass'y. and P15 on the Capstan/Cylinder Motor Drive C.B.A.
- (3) Remove Screw (A) and the Grounding Plate.
- (4) Remove 3 Screws (B) and then lift the D.D. Cylinder Unit slowly from the top side.

#### Note:

- (1) Do not pull on the flexible cables coming from the D.D. Cylinder Unit.
- (2) Since there is very little clearance between D.D. Cylinder Unit and Chassis, remove the D.D. Cylinder Unit gently and carefully.

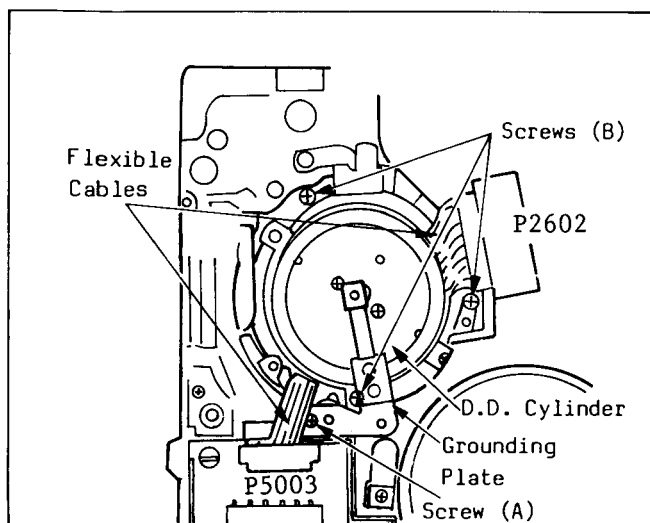


Fig. M7

- (5) Reinstall the Upper Rotary Transformer (S) Unit, refer to the Replacement of Upper Cylinder Unit.
- (6) Reinstall the new D.D. Cylinder Unit on the chassis by reversing the procedure described above.

#### Note:

- (1) Upon completion of replacement procedure, confirm performance. If any further maintenance is required, perform "TAPE INTERCHANGEABILITY" with the Alignment Tape (VFM8180H8PF).

### 2-3-3. REPLACEMENT OF CAPSTAN MOTOR UNIT

- (1) Ensure Unit is in the STOP mode. Remove the Capstan Belt.
- (2) Unlock Flexible Cable P2603 on the Capstan/Cylinder Motor Drive C.B.A.

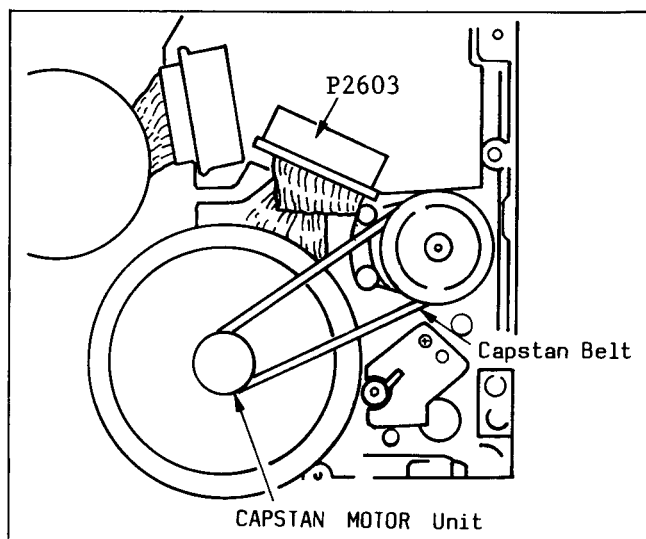


Fig. M8

- (3) Remove the Cassette Up Holder, LP Head Amp, Head Amp Holder and Mode Select Switch Unit.
- (4) Take out the Idler Gear while pushing on the Tape Guide Lever Unit until it clears the Idler Gear Teeth as shown in Fig. M9.

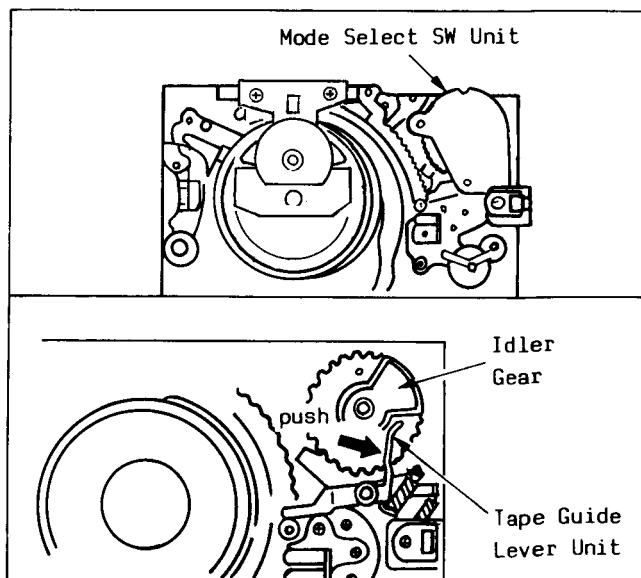


Fig. M9



- (5) Remove 2 Screws (B). Then remove Screw (C) while slightly pushing on the Sector Gear Unit to reveal Screw (C) as shown in Fig. M10. Then remove the A/C Head Base Unit.

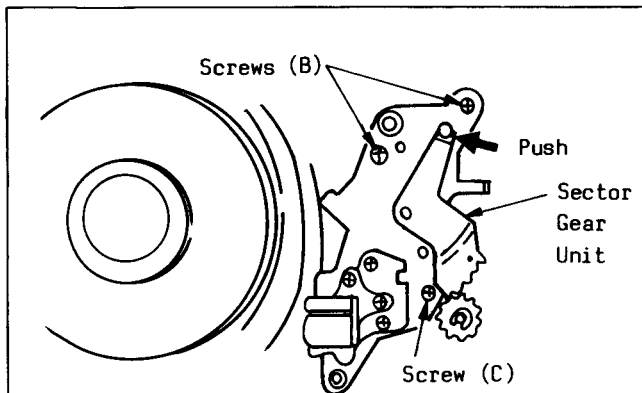


Fig. M10

- (6) Remove the Cut Washer and Motor Gear. Then place the Unit in play position completely by rotating Loading Idle Gear clockwise as shown in Fig. M11.

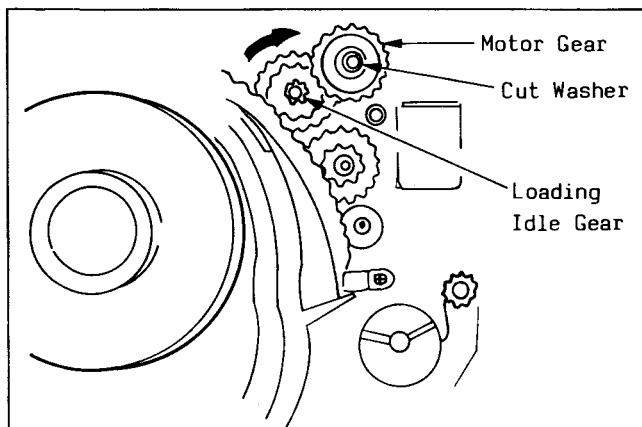


Fig. M11

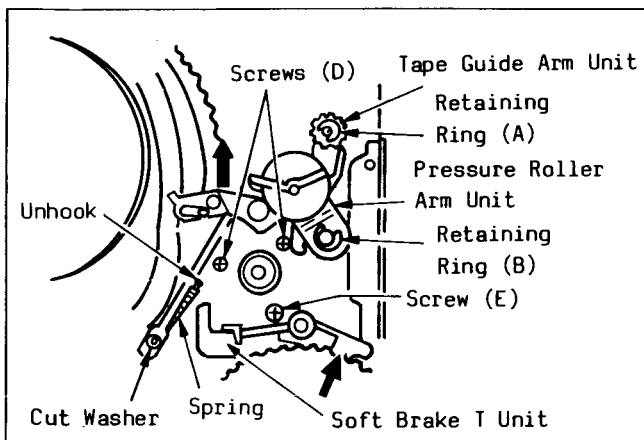


Fig. M12

- (7) Remove Retaining Ring (A) and Tape Guide Arm Unit by pushing it in the direction shown by arrow and lifting it off its Post.  
 (8) Remove the Cut Washer and unhook the Spring.  
 (9) Remove Retaining Ring (B) and Pressure Roller Arm Unit.  
 (10) Refer to the Disassembly/Assembly and Adjustment Procedures of Mechanism on page 2-2-16. Use steps 3, 4 and 5 to remove the Takeup Reel Gear, Clutch Gear Unit and Soft Brake T Unit.  
 (11) Remove 2 Screws (D) and Screw (E) while pushing slightly on the Soft Brake T Unit. Then remove the Capstan Stator Unit from Bottom Side.  
 (12) Replace the new Capstan Motor Unit and then tighten 2 Screws (D) and Screw (E).

### Adjustment of FG Head Gap

\* Specification: ..... 0.1~0.15mm

- (1) Slightly loosen the 2 screws.
- (2) Put the paper which is used for cover page of this volume into the gap between F.G.Head and Capstan rotor.
- (3) After adjustment, tighten 2 screws.

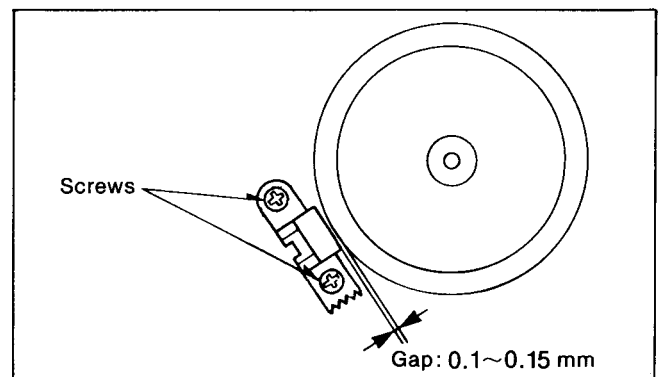


Fig. M12-1

### Note:

Do not touch the surface of rotor and keep any magnetizable material away.

#### 2-3-4. ADJUSTMENT OF TENSION POST POSITION

- (1) Remove the Cassette Up Unit.
- (2) Cover the Tape End Sensor and Cassette Up/Down Sensor with Black Tape.
- (3) Push the Play button to complete loading operation sequence.
- (4) As soon as loading is completed, disconnect the AC plug of AC Adaptor.
- (5) Loosen Screw (F) a little bit and adjust the Tension Adjust Piece (in either direction) as indicated by the arrow so that the center of the Tension Post is 1mm to the left of the center of the S1 Post as shown in Fig. M13. Tighten Screw (F) to secure it.

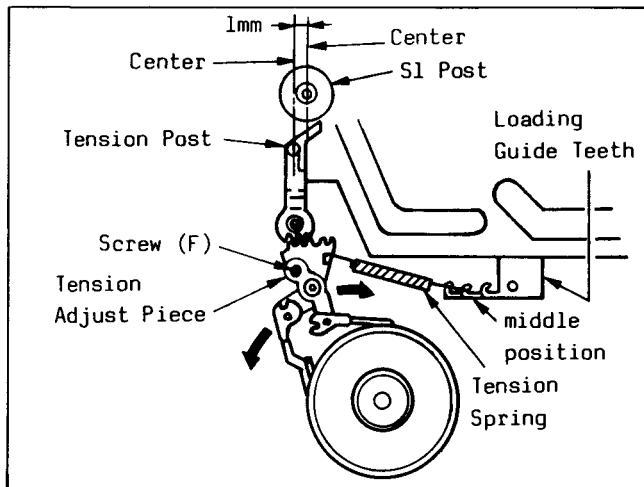


Fig. M13

Note:

After this adjustment, reposition Tension Spring on Loading Guide Teeth to middle position as a Back Tension Adjustment as shown in Fig. M13.

#### 2-3-5. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS (PRELIMINARY ADJUSTMENT)

Height adjustment of S1 Post

\* Specification: .....  $14.72 \pm 0.1\text{mm}$

- (1) For adjustment of S1 post height, turn 4mm Nut (A) slightly in either direction as necessary to the correct clearance between the upper edge of the lower tape guide on S1 Post and the lower portion of Cassette Stand S Unit.

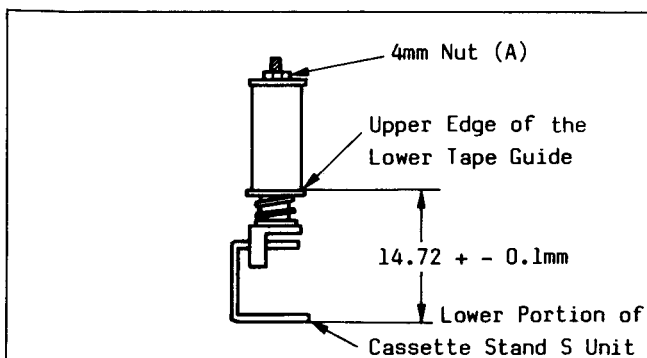


Fig. M14

#### Height adjustment of S2 and T1 Posts

\* Specification:

S2 Post .....  $0.56 \pm 0.1\text{mm}$

T1 Post .....  $0.74 \pm 0.1\text{mm}$

- (1) For adjustment of S2 and T1 post height, loosen the Black Lock Screw located on the lower portion of Posts (S2 & T1) using the Lock Screwdriver.
- (2) Turn top of post with Hex. Wrench (1.5mm) slightly in either direction as necessary to the correct clearance as shown in Fig. M15.

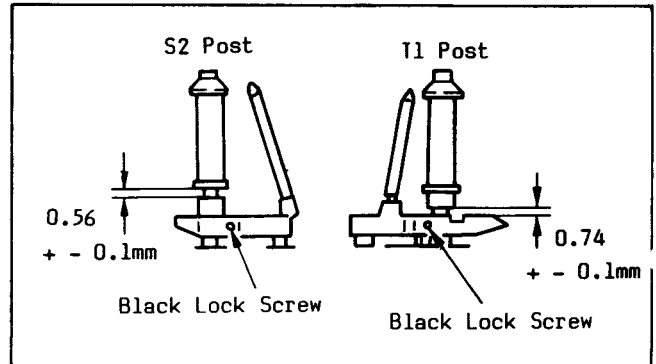


Fig. M15

#### 2-3-6. TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)

Note:

- 1) To perform these adjustment/confirmation procedures, make sure that the Tracking Control is set in the fixed (neutral) position by pushing both of the Tracking Control Up/Down Switches, on the Main C.B.A., in at the same time.
- 2) Before these adjustment/confirmation procedures, remove the cassette protective Tape Cover from a Cassette Tape or the Alignment Tape (VFM8180H8PF).

\* Equipment Required:

Dual Trace Oscilloscope

Alignment Tape ..... (VFM8180H8PF)

Hex. Wrench (1.5mm)

##### 1. Confirmation of Tape Travel

- (1) Play back a cassette tape and confirm that the tape travels without curling at the upper and lower guides on Posts S2 and T1.

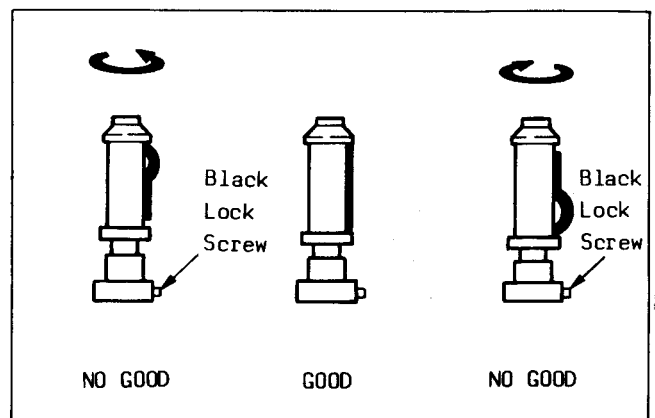


Fig. M16

- (2) If curling is apparent, adjust the height of posts by turning the top of Post with Hex. Wrench. (for S2 and T1)

**Note:**

Before turning S2 and T1, slightly loosen the Black Lock Screw using the Lock Screwdriver.

## 2. Confirmation of A/C Head

This confirmation is required when the A/C Head or Capstan Motor is replaced and for a preliminary height adjustment.

For final adjustment, perform items 6-3 and 6-4.

- (1) Looking at the lower edge of the Control Head with the tape in motion, ensure that the lower edge of the tape runs 0.25mm above the lower edge of the Control Head. If it doesn't, turn Black Screw (A) slightly in either direction as necessary to correct it. Turn clockwise to lower the head and counterclockwise to raise it.

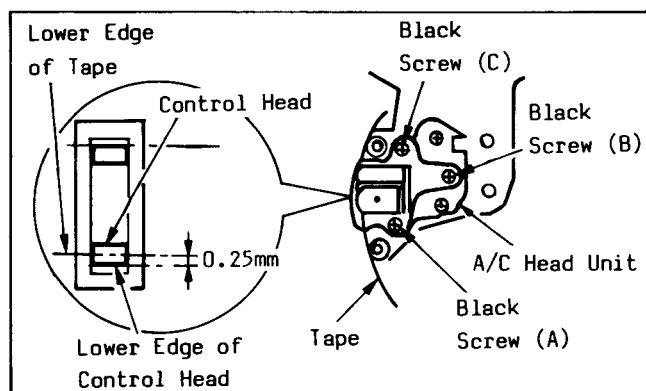


Fig. M17

## 3. Confirmation of Tilt of A/C Head

- (1) Play back a cassette tape and confirm that the tape runs properly between lower and upper limits of T3 Post. Also confirm that the tape is running smoothly.
- (2) If adjustment is required, turn Black Screw (B), in Fig. M17, counterclockwise until curling is apparent at lower edge of T3 Post. Then turn Black Screw (B) clockwise until the curling smooths out.

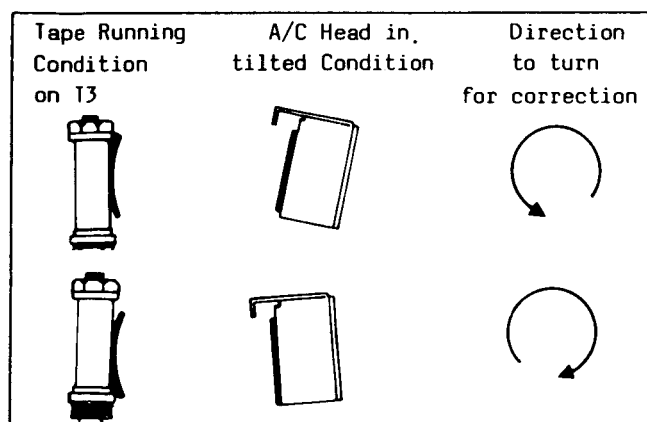


Fig. M18

## 4. Height and Azimuth Adjustment of A/C Head

- (1) Connect the oscilloscope to TP4001 on the Main C.B.A.
- (2) Play back the Monoscope portion (6KHz, Mono) of the Alignment Tape.
- (3) Adjust Black Screw (C) on the A/C Head Base in Fig. M17 so that the output level is at a maximum.

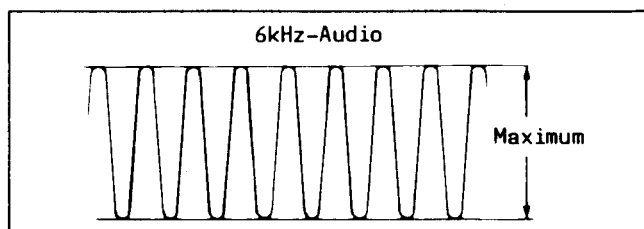


Fig. M19

- (4) Readjust Black Screw (A) shown in Fig. M17 for maximum output.
- (5) Disconnect the oscilloscope.

## 5. Horizontal Position Adjustment of A/C Head

- (1) Set the tracking control to the fixed (neutral) position by pushing both of the tracking control Up/Down Switches, on the Main C.B.A., in at the same time. Connect the oscilloscope to TP3501 on the Main C.B.A. Use TP2001 as a trigger.
- (2) Play back the monoscope portion of the Alignment Tape and confirm that RF envelope appears, as in Fig. M21.
- (3) If adjustment is required, loosen 2 Black Screws (D) and then slowly move the A/C Head Base back and forth using a screwdriver so that the envelope is at a maximum.

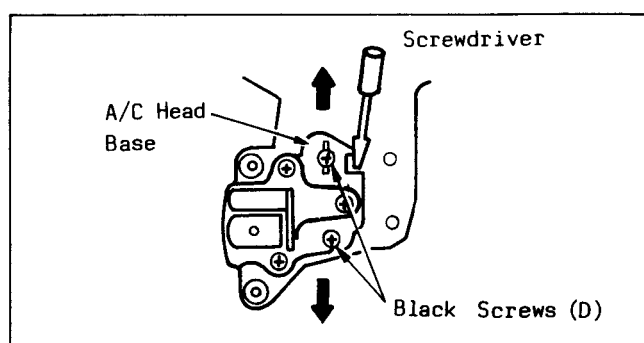


Fig. M20

- (4) Confirmation of the correct adjustment can be made by alternately pushing the Tracking Control Up/Down Switches, on the Main C.B.A. to check the symmetry of the envelope.
- (5) Tighten 2 Black Screws (D).
- (6) Reconfirm the symmetry of the envelope. If it has changed, repeat steps 3-5.

## 6. Confirmation/Adjustment of Envelope Output

- (1) Set the tracking control to the fixed (neutral) position by pushing both of the tracking control Up/Down Switches, on the Main C.B.A., in at the same time. Connect the oscilloscope to TP3501 on the Main C.B.A. Use TP2001 as a trigger.
- (2) Playback the Monoscope portion of the Alignment Tape and adjust the height of posts S2 and T1 watching the scope display so that the envelope becomes as flat as possible. ( $V1/V\text{-max} \geq 0.7$ ,  $V2/V\text{-max} \geq 0.8$ ) If adjustment is required, turn top of post with Hex. Wrench (1.5mm). For adjustment of S2 and T1, refer to Item 6-1 and it's Note.

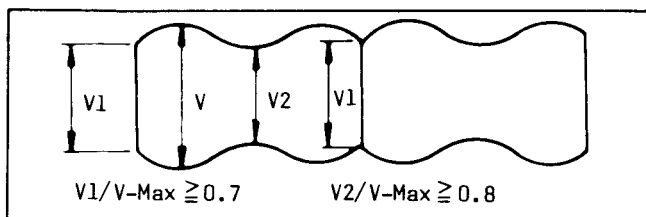


Fig. M21

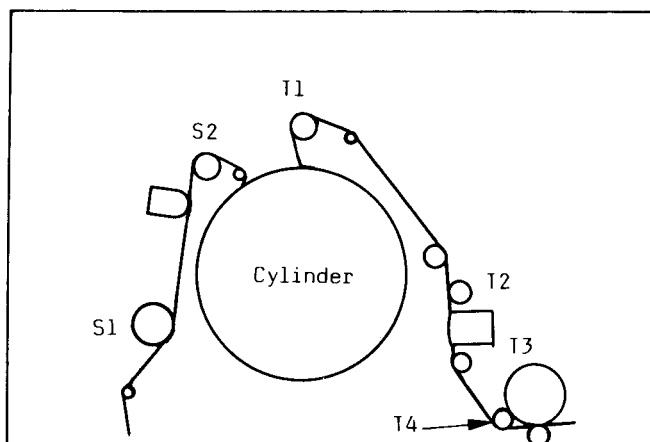


Fig. M22

- (3) When the scope display is as shown in Fig. M23, adjust the height of S2 so that the waveform looks like Fig. M25.

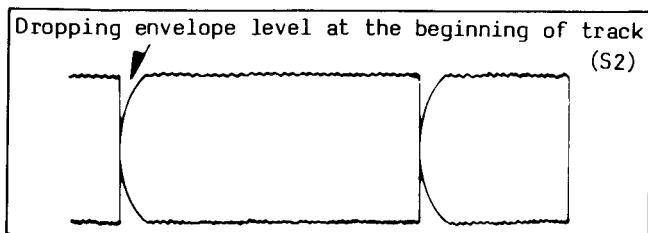


Fig. M23

- (4) When the scope display is as shown in Fig. M24, adjust the height of T1 so that the waveform looks like Fig. M25.

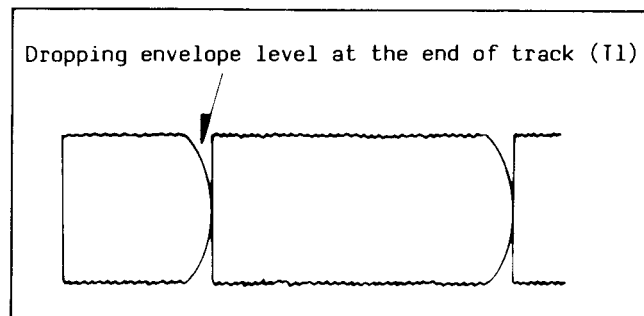


Fig. M24

- (5) The scope display should appear as shown in Fig. M25 when S2 and T1 Posts are adjusted properly.

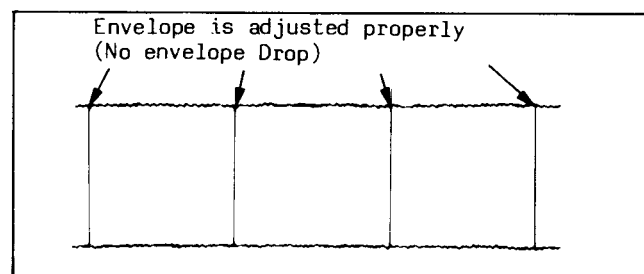


Fig. M25

### Note:

- 1) Upon completion of adjustment of S2 and T1, tighten the Black Lock Screw on S2 and T1 using Lock Screwdriver. Then confirm the Horizontal Position of A/C Head by pushing the Tracking Control Up or Down switches on the Main C.B.A. alternately to check the symmetry of the envelope. And if required, perform "Horizontal Position Adjustment of A/C Head".
- 2) After these adjustment/confirmation procedures, replace the cassette protective Tape Cover.

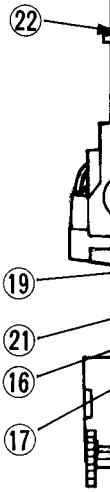
2-3-7. ASSEMBLY AND ADJUSTMENT  
PROCEDURE OF MECHANISM

This procedure starts with the condition that the Cabinet parts and Cassette Up Unit have been removed.  
When re-assembling, perform the step (s) in the reverse order.

STEP /LOC No.	START- ING No.	PART	REMOVAL		INSTALLATION ADJUSTMENT # CONDITION * REMARKS
			Fig. No.	REMOVE * UNHOOK/UNLOCK/RELEASE	
①	1	RT (S) UNIT D.D. CYL. UNIT	T/B M27, 28	3 (S-0) * Connectors	* Remove the Earth Plate before Step ①
②	3	TAKEUP REEL GEAR	T M26, 28	(C-1), (W-1) <Note 1>	(+)
③	3	CLUTCH GEAR UNIT	T M26, 28	(C-2), (W-2) <Note 1>	(+)
④	4	SOFT BRAKE T UNIT	T M26, 28	(C-3), * (P-1) <Note 1>	(+)
⑤	6	HEAD AMP ANGLE	T M29	2 (S-2), (S-3) * Connector	* Remove the LP Head amp Unit before Step ⑤.
⑥	6	MODE SELECT SWITCH UNIT	T M26, 29	(S-3) * Connector	Align the Punch Mark with the Notch. # STOP MODE
⑦	6	TAPE GUIDE LEVER UNIT	T M26, 29	(C-4), * (P-2) <Note 1>	See, Hooking Position.
⑧	7	IDLER GEAR	T M26, 30	-----	(+) Align the Notch with the Shaft of Loading Idle Gear. # STOP MODE
⑨	8	SECTOR GEAR UNIT	T M26, 30	-----	(+) Align the Hole with the Notch. # STOP MODE
⑩	9	A/C HEAD BASE UNIT	T M26, 30	3 (S-4)	<Note 2>
⑪	10	MOTOR GEAR	T M26, 31	(C-5) <Note 1>	(+) # STOP MODE (Fig. M31)
⑫	11, 10	LOADING MOTOR UNIT	T M31	2 (S-5)	<Note 2>
⑬	10	TAPE GUIDE LEVER UNIT	T M26, 31	(R-1), * (P-3)	See, Hooking Position.
⑭	14	TENSION ARM UNIT	T M26, 32	(C-6), (W-3) <Note 1>	(+) See, Adjustment of Tension Post Position.Align the Punch Mark with the Notch. # Loading
⑮	15	SUPPLY REEL TABLE UNIT	T M26, 32	(C-7), (W-4) <Note 1>	(+)
⑯	15	TENSION BAND ARM UNIT	T M26, 32	(C-8), * (P-4) <Note 1>	(+)
⑰	16, 14	CASSETTE STAND S ASS'Y	T M26, 33	2 (S-6), * Connector	(+) <Note 2>

STEP /LOC No.	START- ING No.	PART	REMOVAL		INSTALLATION ADJUSTMENT # CONDITION
			Fig. No.	REMOVE * UNHOOK/UNLOCK/RELEASE	
⑱	18	SHIELD COVER	B M27	(S-7)	
⑲	18, 11, 10, 2	LOADING GUIDE ASS'Y	T M26, 34	6(S-8), *(L-1), *Connector	(+) <Note 2> <Note 3> # Loading
⑳	19	TAKEUP SHAFT HOLDER ASS'Y	T M26	(C-9)	(+) <Note 1>
㉑	19	SUPPLY SHAFT HOLDER ASS'Y	T M26	-----	(+)
㉒	19	V STOPPER BASE ASS'Y	T M26	2(S-9)	
㉓	19, 13	PRESSURE ROLLER ARM UNIT	T M26, M35	(R-2), (C-10), *(P-5), <Note 1>	(+) See, Hooking Condition.
㉔	23, 5	CAPSTAN MOTOR UNIT	T M26, 27, M35	*Capstan Belt, 3(S-10), *Connector	<Note 2> See, Replacement of Capstan Motor Unit.
㉕	4	CASSETTE STAND-T	T M26, M35	2(S-11)	(+) <Note 2>
㉖	19	RING GUIDE 1	T M36	(S-12)	See, setting condition.
㉗	19	RING GUIDE 3	T M36	(S-13)	See, setting condition.
㉘	27, 26, 21, 20	LOADING RING S UNIT	T M26, M36	-----	(+) Align the Hole with punch Mark.
㉙	28	LOADING DRIVE GEAR-T	T M36	(C-11) <Note 1>	(+)
㉚	28	RING GUIDE GEAR-S (2 USED)	T M36	-----	----- White Color Gear
㉛	31	RING LIMITER	T M26, 37	(S-14)	
㉜	28	LOADING RING T UNIT	T M36, M37	-----	See, setting Condition. Align the Punch Mark with the Notch.
㉝	31	LOADING IDLE GEAR	T M26, 37	-----	(+) Align the Punch Mark with the Notch.
㉞	32, 28, 19	RING GUIDE GEAR-T (2 USED)	T M37	-----	(+) Black Color Gear # STOP MODE
㉟	10	LOADING DRIVE GEAR-S	T M36, M37	(C-12) <Note 1>	(+)
㊱	33, 32, 30, 28	RING GUIDE-2	T M36, M37	(S-15)	
㊲	32, 28, 22, 19, 17	LOADING GUIDE-S UNIT	T M38	3(S-16)	<Note 2>

List of Abbreviations:  
T = Top, B = Bottom,  
(R-1) = Retaining Ring (R-1); (P-1) = Spring (P-1); (S-1) = Screw (S-1);  
(W-1) = Washer (W-1); 2(S-2) = 2 Screws (S-2); (C-1) = Cut Washer (C-1);  
(L-1) = Locking Tab (L-1)  
(+) = Refer to Exploded Views for Lubrication information



EARTH  
PLATE



LATION  
 ADJUSTMENT  
 CONDITION  
  
 2> <Note 3>  
 Loading  
  
 >  
  
 ing  
 .  
 <Note 2>  
 Placement of  
 Motor Unit.  
 <Note 2>  
  
 ing  
 .  
 ing  
 .  
 gn the Hole  
 n punch Mark.  
  
 ---  
 Color Gear  
  
 tting  
 on.  
 e Punch Mark  
 e Notch.  
  
 e Punch Mark  
 Notch.  
  
 k Color Gear  
 ODE  
  
 <Note 2>

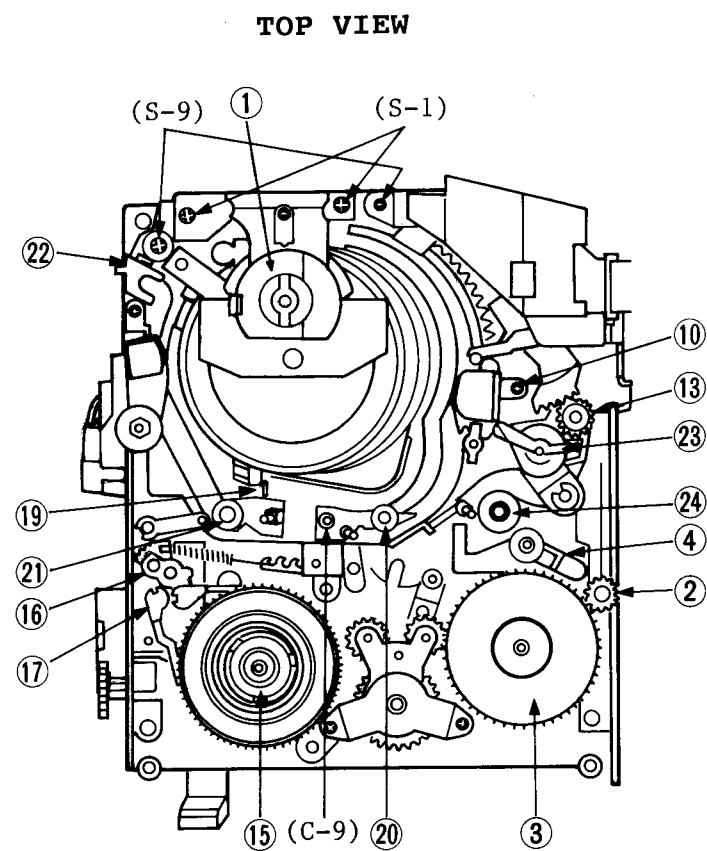


Fig. M26

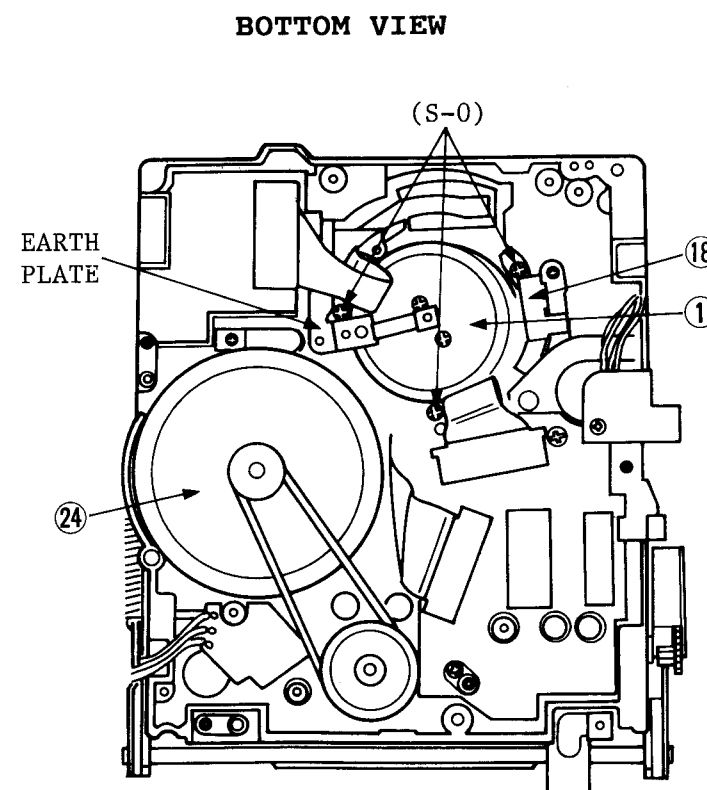


Fig. M27

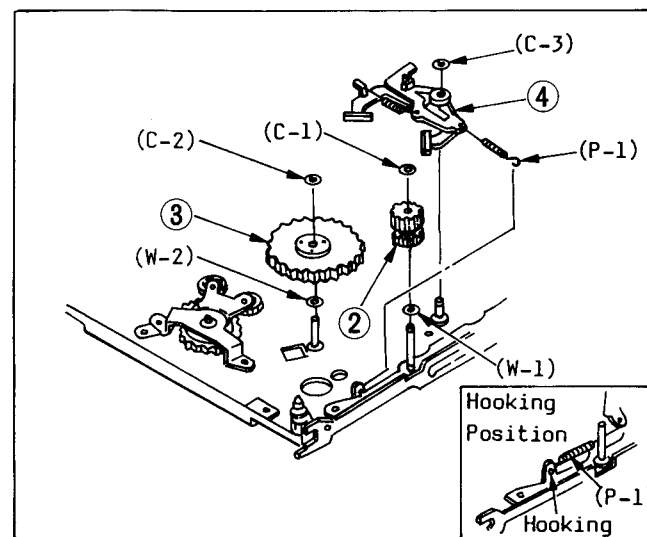


Fig. M28

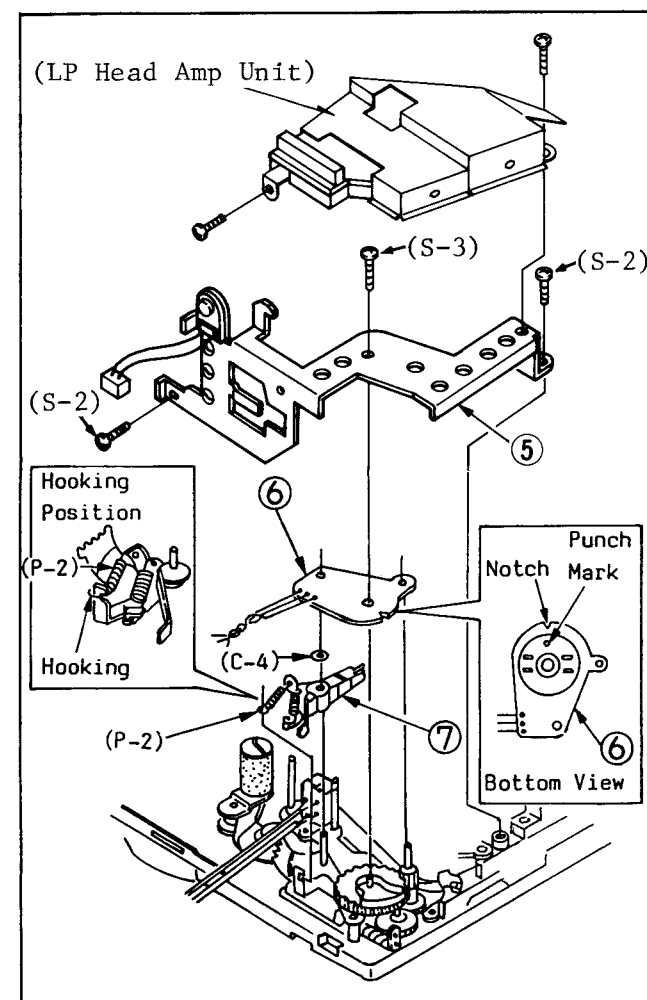


Fig. M29

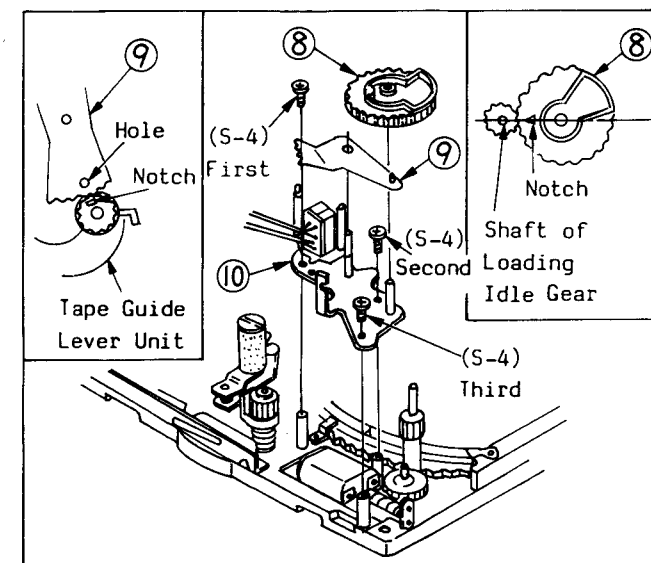


Fig. M30

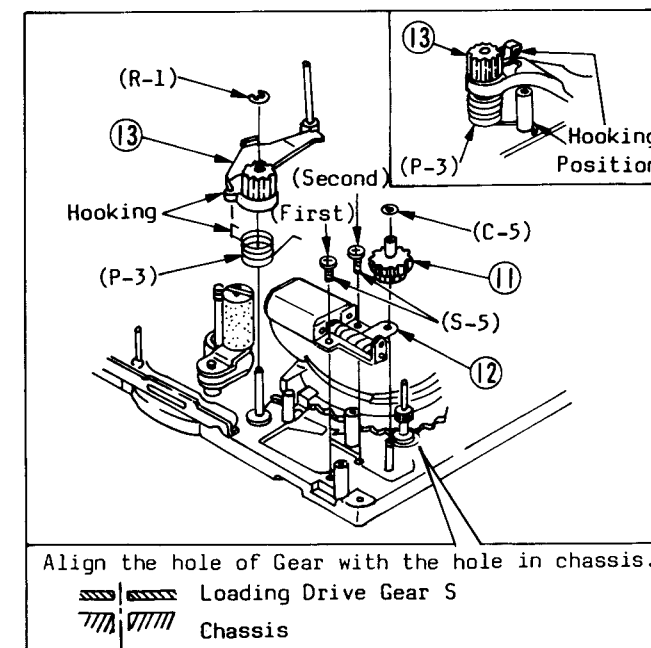


Fig. M31

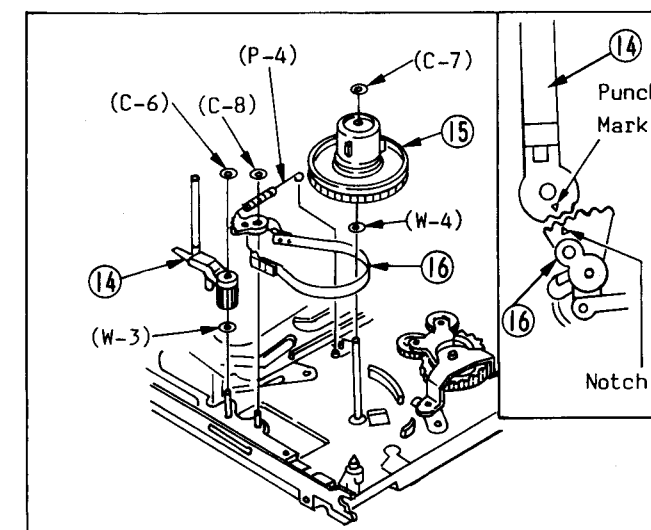


Fig. M32

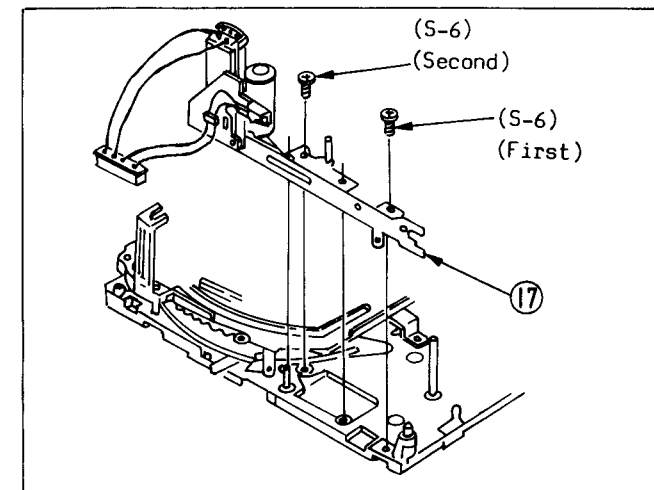


Fig. M33

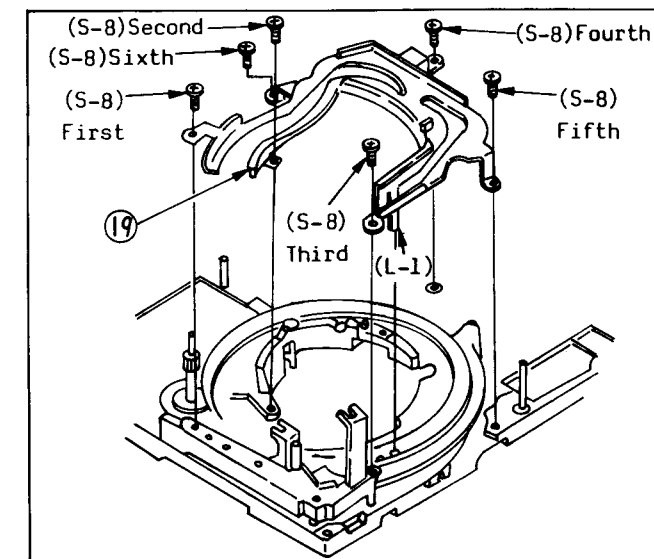


Fig. M34

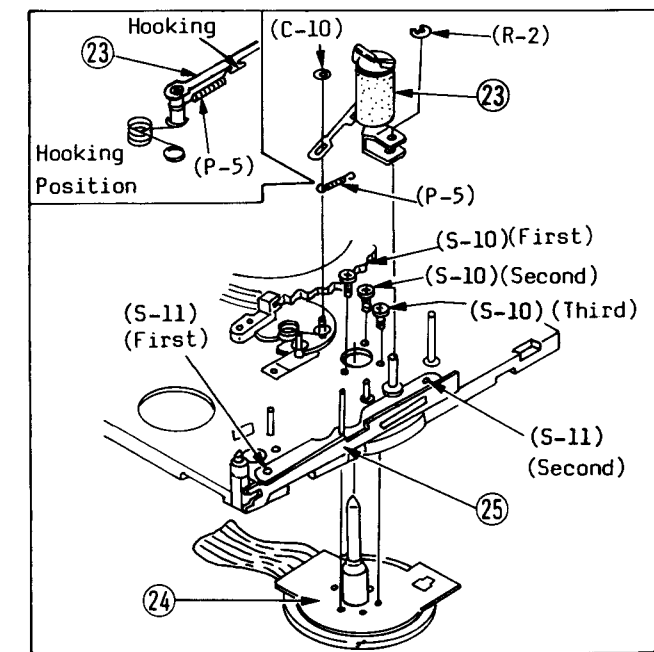


Fig. M35

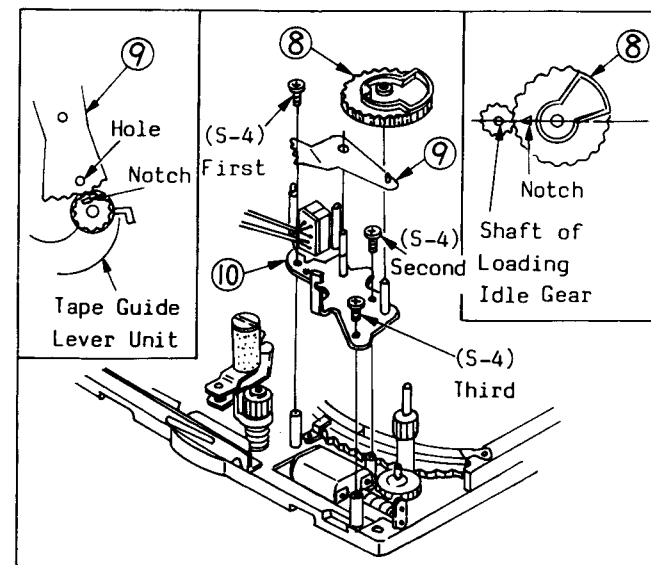
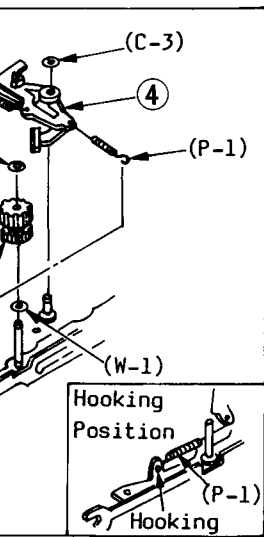


Fig. M30

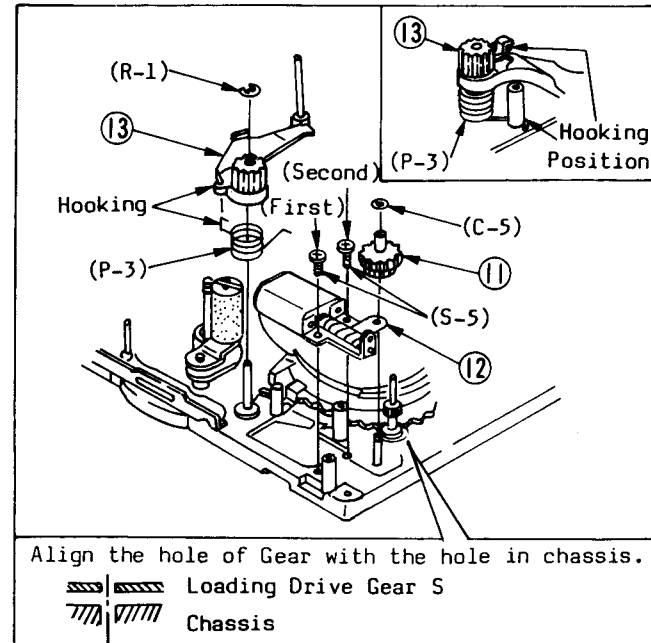
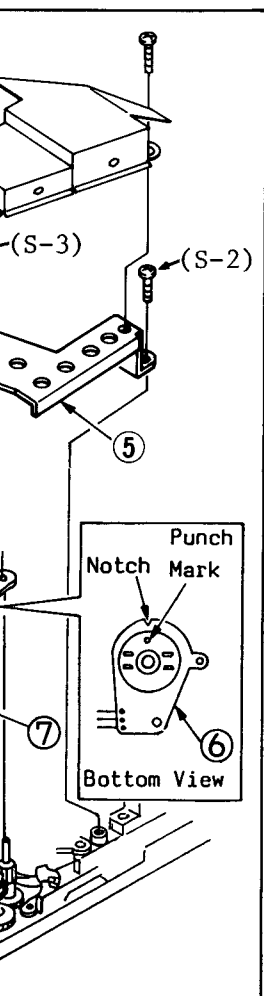


Fig. M31

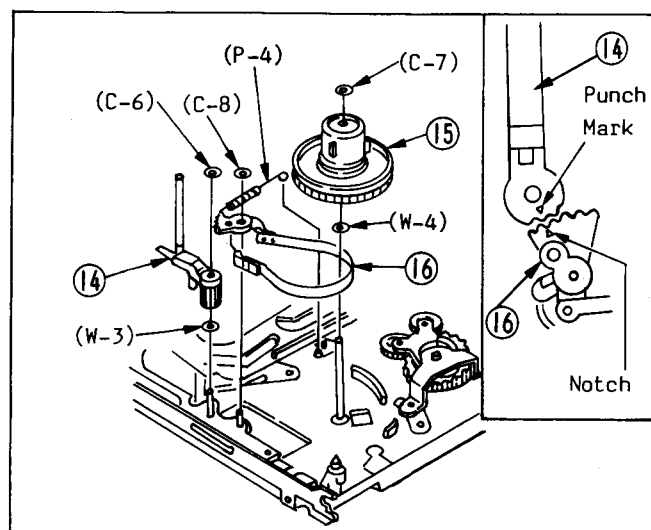


Fig. M32

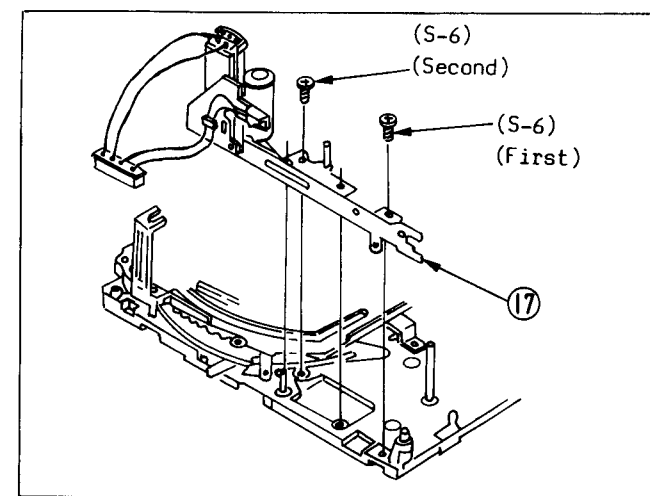


Fig. M33

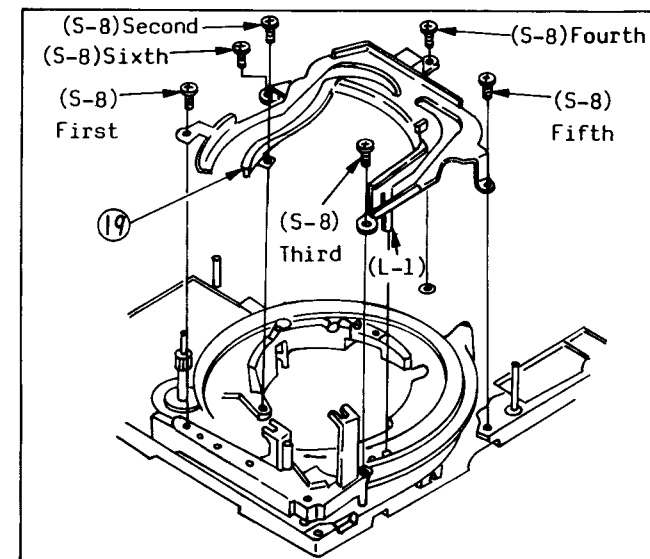


Fig. M34

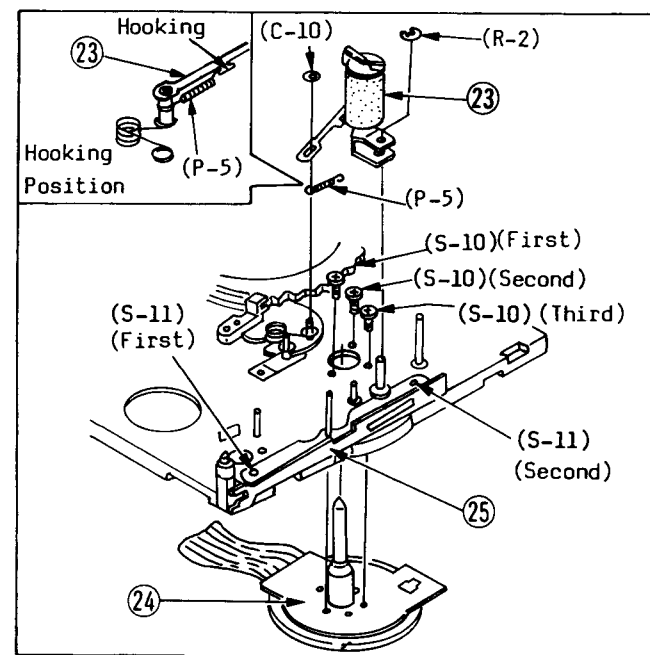


Fig. M35

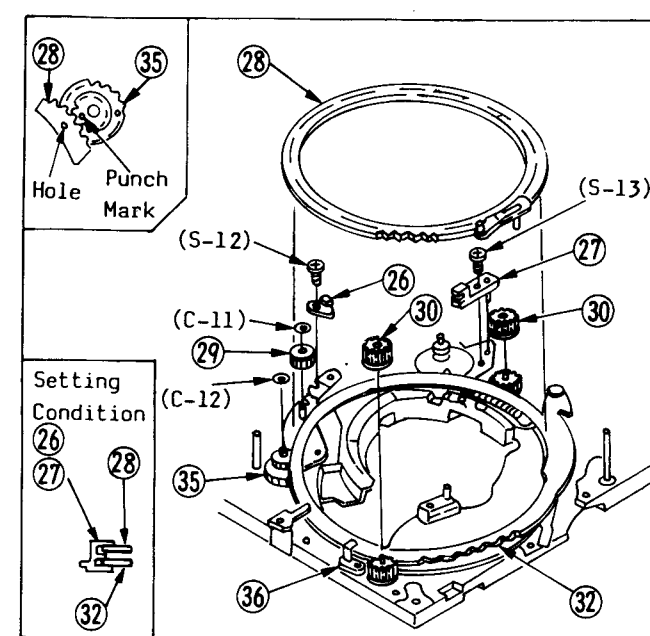


Fig. M36

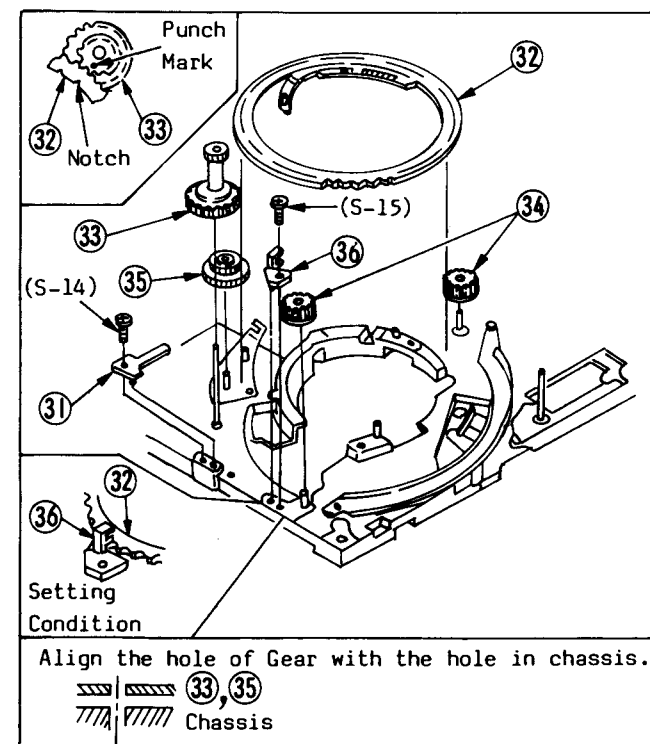


Fig. M37

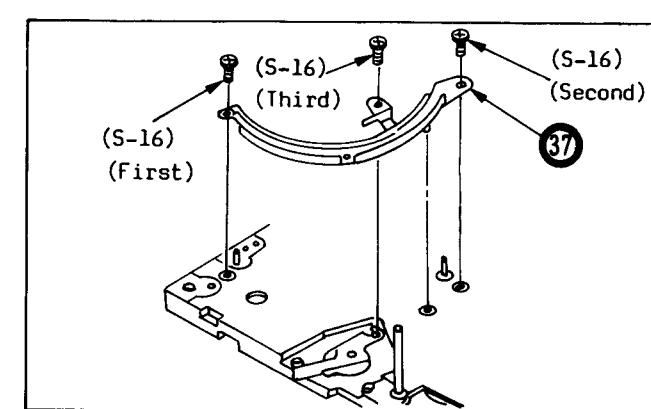
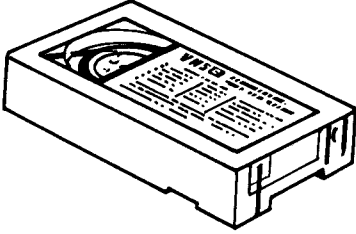
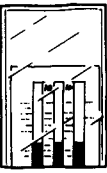
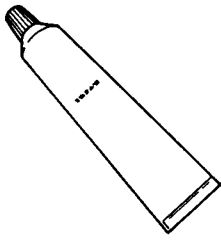
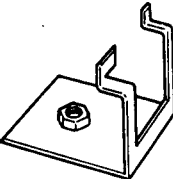
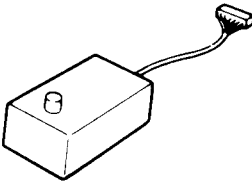
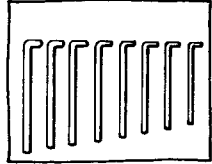


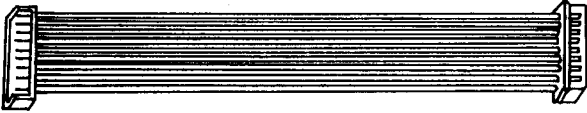

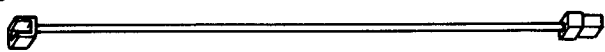
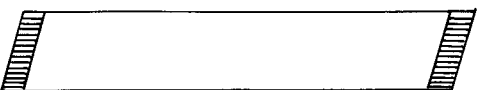
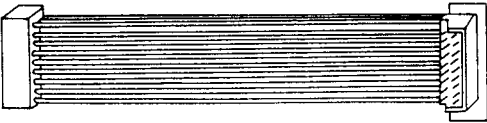
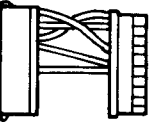
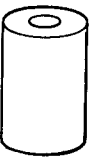
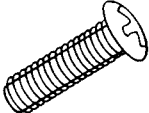
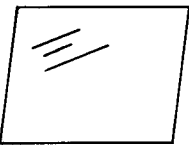


Fig. M38

- Reference's <Notes> in Table 7 :
1. This Cut Washer is not reusable. If removed, install a new one.
  2. In each figure, tighten the screws in the order indicated in the diagram.
  3. Remove the shield cover over the PG Pickup to allow the release of (L-1).



Service Fixtures & Tools

VFM8180H8PF VHS-C Alignment Tape 	VFK27 Head Cleaing Stick 	MOR265 Morlytone Grease 
VFK0382 CAMERA HOLDER 	VFK0304 Y/C Separator 	VFK0326 Hex. Wrench Set (0.7, 0.9, 1.2, 1.5, 1.6, 2, 2.4, 3mm) 
VFK0431 Camera Holder Arm (NEW)  (3 pcs)	Extension Cables VFKS0067 (NEW)  VFK0429 (NEW)  VFKS0068 (NEW)  VFKS0060  VFK0430 (NEW)  VFK0380  VFKS0074 (NEW) 	
VFK0432 Holder Spacer (NEW) 		
XSN26 + 18 Screw 		
VFK0374 VFK0375 Colour Temperature Conversion Filter 		

2-4. ELECTRICAL ADJUSTMENT PROCEDURES

2-4-1. ELECTRICAL ADJUSTMENT FOR CAMERA SECTION

TEST EQUIPMENT AND TOOLS

The following equipment is required for adjustment of the CAMERA section of VHS-C Movie.

- Oscilloscope  
Dual Trace, 25MHz, 2mV/DIV,  
10:1 Probe  
1:1 Probe
- Digital Volt Meter or VTVM
- Frequency Counter
- Vectorscope
- Light Meter
- Tripod
- Colour Video Monitor
- Lighting  
140 footcandles (1400lux), on the chart surface 3200 degrees K.
- Reflection Chart  
\*Logarithmic Gray Scale Chart  
(Part No.:YWV2310RB99)  
\*Colour Chip Chart  
(Part No.:YWV2100RB98)  
\*Ball Chart  
(Part No.:YWV2100RB03)  
\*Hunting Chart  
(Included in this Service Manual)  
\*White Chart (Card)  
(The white paper is available as a white chart)  
\*J Chart  
(Part No.:YWV2100RB3)  
\*B/W Chart  
(Included in this Service Manual)  
\*Gray-White Chart  
(Included in this Service Manual)
- Plastic Tip Driver
- Camera Unit Holder  
(Part No.:VFK0382)
- Camera Holder Arm  
(Part No.:VFK0431)

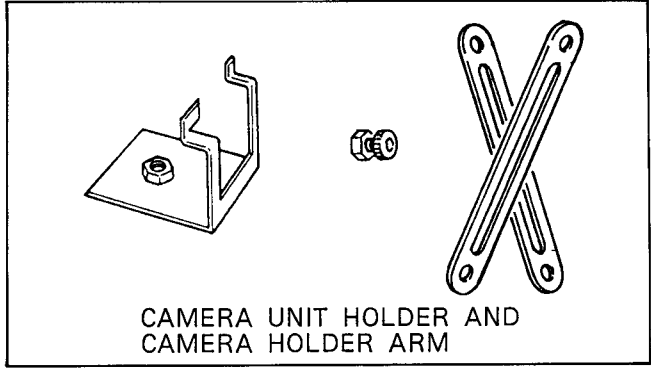


Fig. C1

- Color temperature conversion filter  
\*C12 Filter  
(Part No.:VFK0374)  
\*C2 Filter  
(Part No.:VFK0375)

14. Camera Extension Cables  
(Part No.:VFKS0060, VFK0380, VFK0430)

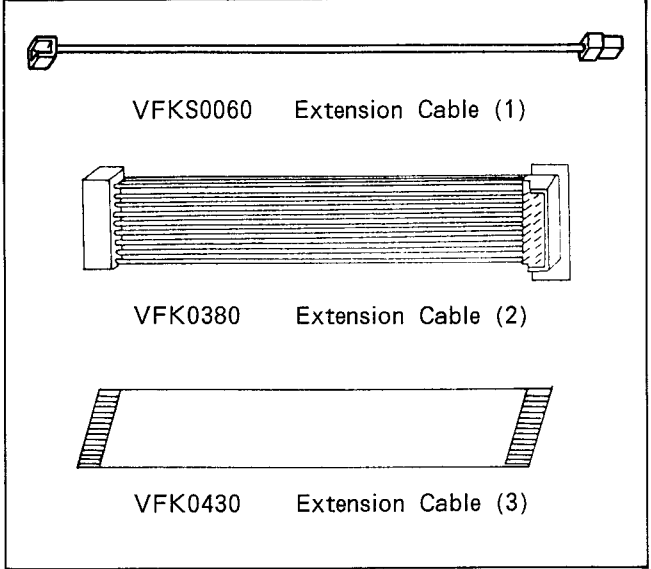


Fig. C2

PREPARATION

- Remove the Side Case (L) and Side Case (R) from the Unit.  
(Refer to the Disassembly Section.)
- Mount the Camera Unit on the tripod using the Camera Unit Holder (VFK0382) and Camera Holder Arm (VFK0431).
- Connect the Camera Unit, Video Recorder Unit, AC Adaptor, Camera Operation Unit and Colour Monitor TV as shown in Fig. C3.
- Remove the Flexible Cable between FP301 and P1002 And re-connect the Camera Extension Cable (3) (VFKW0053C) to these connectors.

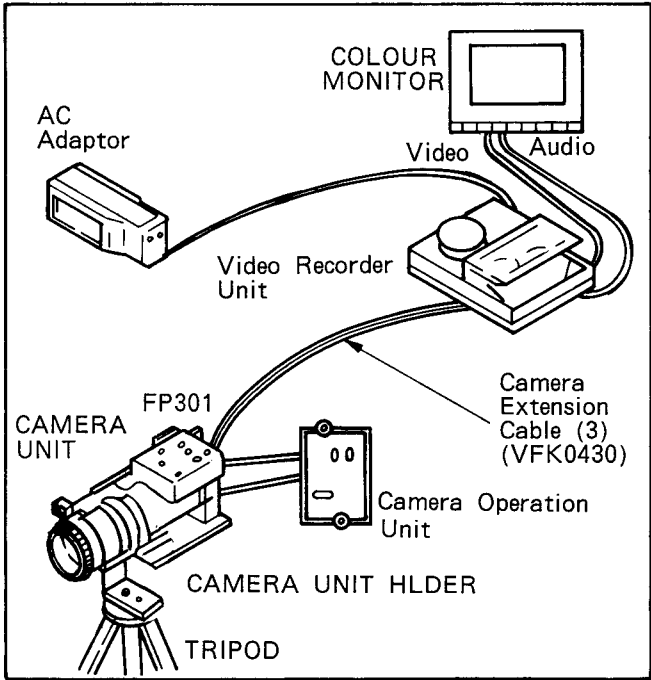
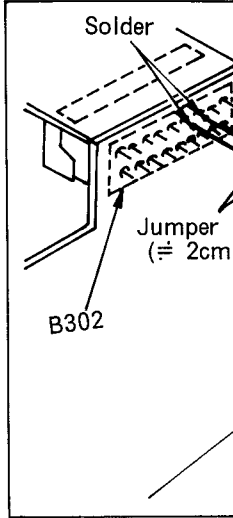


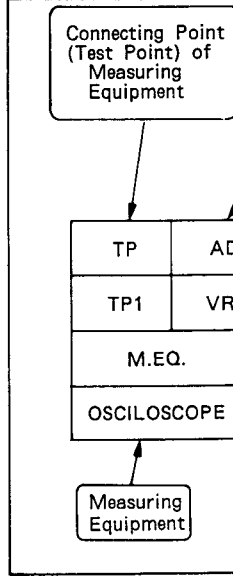
Fig. C3

Note:

- Set the White position during service work.
- Service work performed to maintain lens up the camera.
- To achieve the following points. (H-F) - Pin 13 of after procedure(s).
- FOR TRIGGER To trigger the following points. (H-F) - Pin 13 of after procedure(s).
- If you use colour temperature is 3200 degrees K.



HOW TO READ PROCEDURES



es  
0, VFK0380, VFK0430)

tension Cable (1)

tension Cable (2)

tension Cable (3)

. C2

le (L) and Side Case (R)

mbly Section.)

nit on the tripod using the

Operation Unit and Colour

in Fig. C3.

Cable between FP301 and

ect the Camera Extension

C) to these connectors.

COLOUR  
MONITOR

Video Audio

Recorder

Camera  
Extension  
Cable (3)  
(VFK0430)

Camera Operation  
Unit

UNIT HLDER

. C3

Note:

1. Set the White Balance Switch to INDOOR position during adjustment procedures.
2. Service work for the Camera Unit must be performed in a dust-free location to maintain lens cleanliness.
3. To achieve the best adjustment results, warm up the camera before adjusting.
4. FOR TRIGGER (Refer to Fig. C4)  
To trigger the scope, solder jumper wires to the following pins that are used as test points. (H-Rate - Pin 12 of B302 and V-Rate - Pin 13 of B302). Remove the jumper wires after completing the adjustment Procedure(s).
5. If you use the reflection chart, ensure the colour temperature of the light source used is 3200 degrees K.

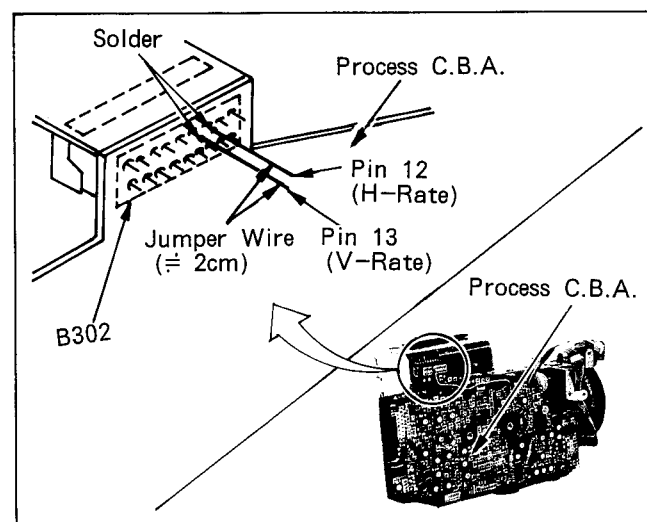


Fig. C4

#### HOW TO READ THE ADJUSTMENT PROCEDURES

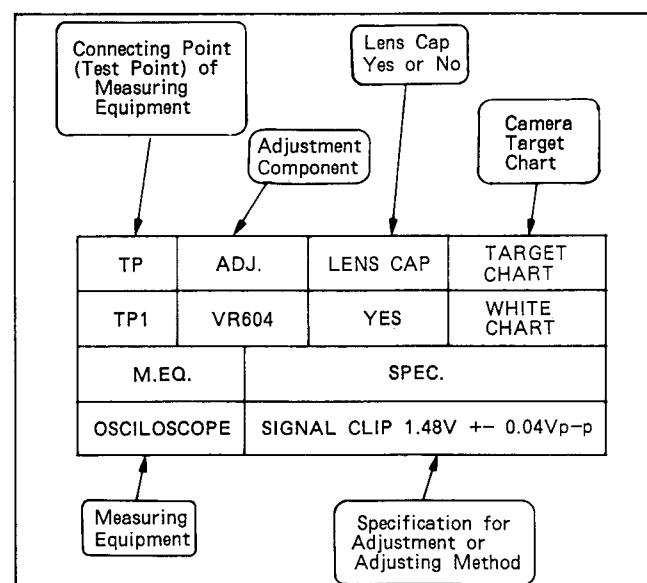


Fig. C5-1

#### CAMER SECTION ADJUSTMENT FLOW CHART

##### CCD DRIVE SECTION

1. BACK FOCUS ADJUSTMENT

2. PLL FREQUENCY ADJUSTMENT

3. V-SUB ADJUSTMENT

4. CCD OUTPUT ADJUSTMENT

##### PROCESS SECTION

5. PEDESTAL LEVEL ADJUSTMENT

6. ALC ADJUSTMENT

7. AGC ADJUSTMENT

8. YH LEVEL ADJUSTMENT

9. WHITE BALANCE ADJUSTMENT

10. CARRIER BALANCE AND BLACK PEDESTAL ADJUSTMENT

11. AUTO WHITE BALANCE MODE ADJUSTMENT

11-1. AWB AUTO MODE (OUTDOOR) ADJUSTMENT

11-2. AWB AUTO MODE (OFFSET) ADJUSTMENT

12. COLOUR PHASE AND R-Y/B-Y GAIN ADJUSTMENT

13. HIGH INTENSITY SUPPRESS ADJUSTMENT

14. LOW LIGHT INDICATION ADJUSTMENT

15. AWT MODE ADJUSTMENT

15-1. AWT MODE (OFFSET) ADJUSTMENT

15-2. AWT MODE (GAIN) ADJUSTMENT

15-3. HIGH COLOUR TEMPERATURE ADJUSTMENT

#### AUTO FOCUS SECTION

16. AF GATE ADJUSTMENT

17. BIMOLF GAIN CONTROL ADJUSTMENT

18. AF AMP BIAS GAIN ADJUSTMENT

19. AF VH FREQUENCY ADJUSTMENT

Fig. C5-2

##### CCD DRIVE SECTION

###### 1. BACK FOCUS ADJUSTMENT

- (1) Aim the Camera at the Hunting Chart in 3m distance and zoom all the way in (Fully tele position).
- (2) Focus the lens on the object.
- (3) Adjust the relay lens adjustment point as shown in Fig. C6.

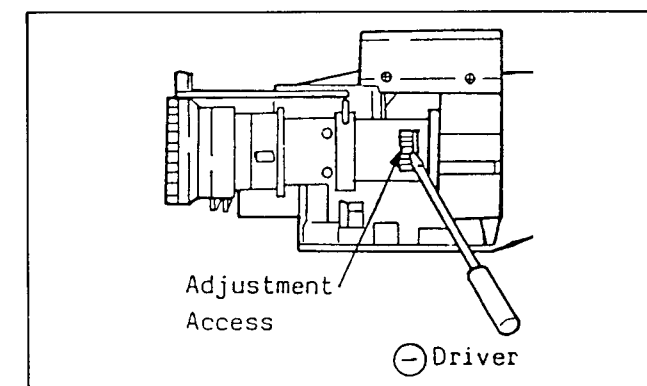


Fig. C6

- (4) Zoom all the way back and adjust the back focus pitch so that the sharpest focus is obtained.
- (5) Repeat the procedure as follows, zoom in, focus, zoom out and adjust until the best focus is obtained over the entire Zoom range.

###### 2. PLL FREQUENCY ADJUSTMENT

- (1) Remove the Sensor Shield Case by removing its 4 Screws.

TP	ADJ.	LENS CAP	CHART
PIN 10 OF B201	C206		
M.EQ.		SPEC.	
FREQUENCY COUNTER		9.65625MHz +- 10Hz	

Note:

B201, C206 : CCD Drive C.B.A.

#### 3. V-SUB ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR201	NO	HALOGEN LAMP
M.EQ.		SPEC.	
MONITOR TV		NO BLOOMING	

- (1) Zoom all the way in (Fully tele position) aim the camera at the Halogen Lamp (3200 degrees K) as shown in Fig. C7-1.

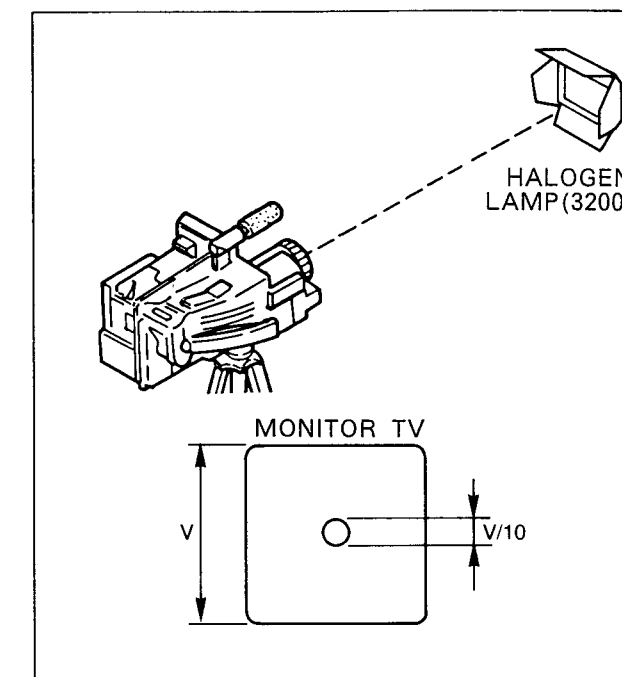


Fig. C7-1

- (2) Set the High Speed Shutter SW to "ON" position.
- (3) Connect a jumper wire between TP10 and TP11 to fully open the iris.
- (4) Adjust the Blooming Control (VR201) so that the monitored picture does not contain Blooming.
- (5) High Speed Shutter "ON" and "OFF" both to confirm that the monitored picture does not contain the Blooming even if the camera is zoomed in as shown in Fig. C7-2.

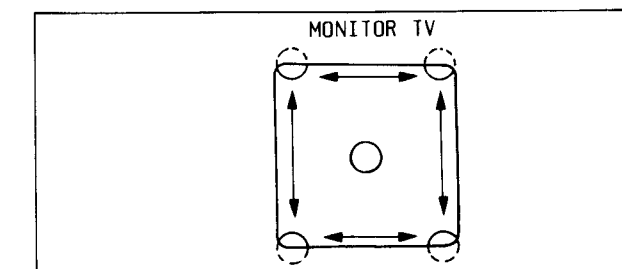


Fig. C7-2

AUTO FOCUS SECTION

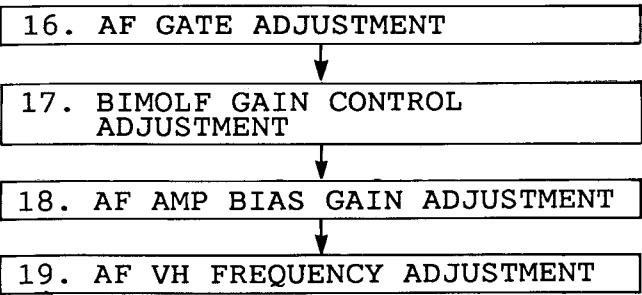


Fig. C5-2

CCD DRIVE SECTION

1. BACK FOCUS ADJUSTMENT

- (1) Aim the Camera at the Hunting Chart in 3m distance and zoom all the way in (Fully tele position).
- (2) Focus the lens on the object.
- (3) Adjust the relay lens adjustment point as shown in Fig. C6.

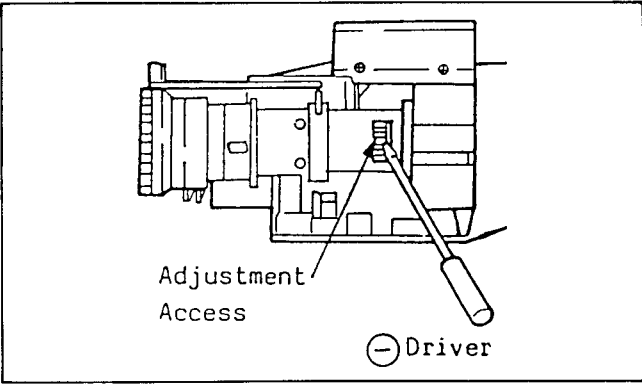


Fig. C6

- (4) Zoom all the way back and adjust the back focus pitch so that the sharpest focus is obtained.
- (5) Repeat the procedure as follows, zoom in, focus, zoom out and adjust until the best focus is obtained over the entire Zoom range.

2. PLL FREQUENCY ADJUSTMENT

- (1) Remove the Sensor Shield Case by removing its 4 Screws.

TP	ADJ.	LENS CAP	CHART
PIN 10 OF B201	C206		
M.EQ.		SPEC.	
FREQUENCY COUNTER		9.65625MHz $\pm$ 10Hz	

Note:  
B201, C206 : CCD Drive C.B.A.

3. V-SUB ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR201	NO	HALOGEN LAMP
M.EQ.		SPEC.	
MONITOR TV		NO BLOOMING	

- (1) Zoom all the way in (Fully tele position) and aim the camera at the Halogen Lamp (3200 degrees K) as shown in Fig. C7-1.

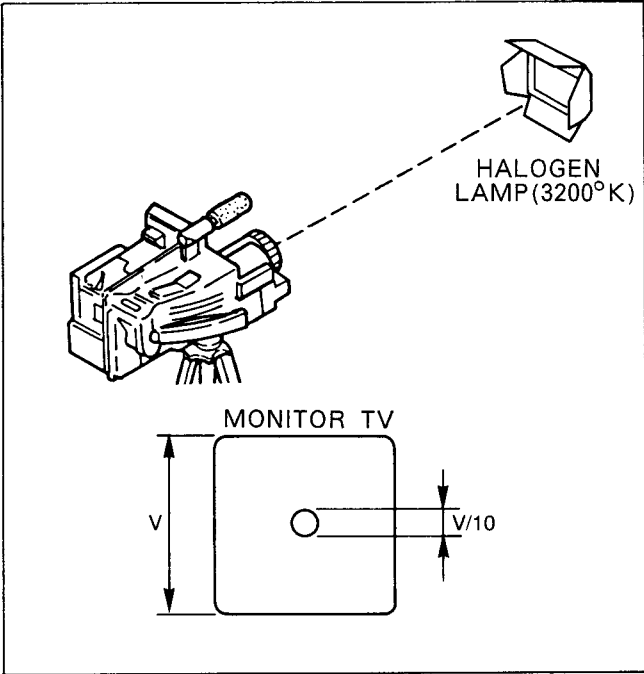


Fig. C7-1

- (2) Set the High Speed Shutter SW to "ON" portion.
- (3) Connect a jumper wire between TP10 and TP11 to fully open the iris.
- (4) Adjust the Blooming Control (VR201) so that the monitored picture does not contain the Blooming.
- (5) High Speed Shutter "ON" and "OFF" both mode, confirm that the monitored picture does not contain the Blooming even if the camera moves as shown in Fig. C7-2.

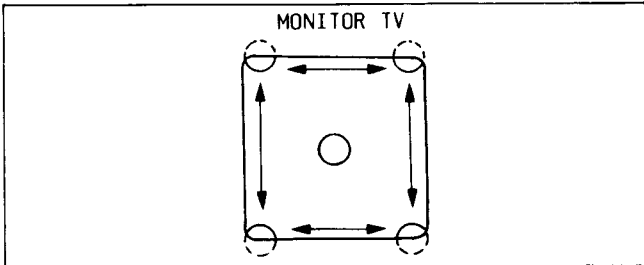


Fig. C7-2

4. CCD OUTPUT ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
TP201	VR202	NO	WHIJ CHART
M.EQ.		SPEC.	
OSCILLOSCOPE		200mV $\pm$ 10mV	

Note:  
TP201, VR202 : CCD Drive C.B.A.

- (1) Aim the camera at the J chart and focus the lens on the object.
- (2) Connect the oscilloscope to TP201.
- (3) Adjust VR202 so that the signal level is 200 $\pm$ 10mVp-p as shown in Fig. C8.

Note:  
Prior to the above adjustment, adjust the iris control (VR301) so that the level at TP1 is 300 $\pm$ 10mV by observing waveform on the oscilloscope.

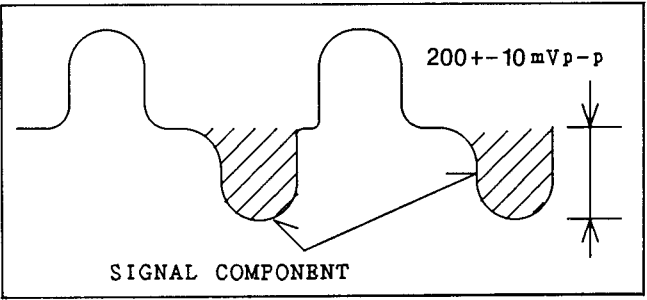


Fig. C8

PROCESS SECTION

5. PEDESTAL LEVEL ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
TP2	VR305	YES	
M.EQ.		SPEC.	
OSCILLOSCOPE		SIGNAL LEVEL EQUALS THE BLANKING (BLNK) LEVEL.	

Note:  
TP2, VR305 : Process C.B.A.

- (1) Cover the Camera Lens with the Lens Cap.
- (2) Connect the scope to TP2 and trigger with Pin 12 of B302 (H-Rate).
- (3) Adjust the Pedestal Level Control (VR305) so that the signal level equals the BLK level as shown in Fig. C9.

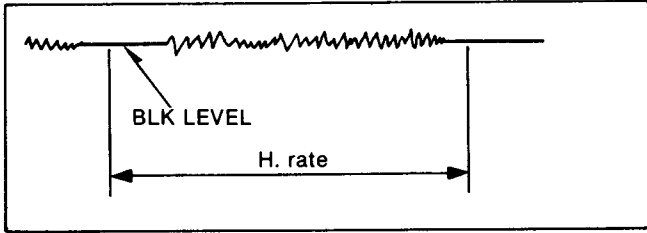


Fig. C9

6. ALC ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
TP1	VR301	NO	GRAY SCALE CHART
M.EQ.		SPEC.	
OSCILLOSCOPE		0.30V $\pm$ 0.02Vp-p	

Note:  
TP1, VR301 : Process C.B.A.

- (1) Aim the camera at the gray scale chart.
- (2) Connect the scope to TP1 and trigger with Pin 12 of B302 (H-Rate).
- (3) Adjust the Camera Unit to obtain 40usec as shown in Fig. C9.
- (4) Adjust the Auto Iris Control (VR301) so that the signal level is 0.30V  $\pm$  0.02Vp-p.

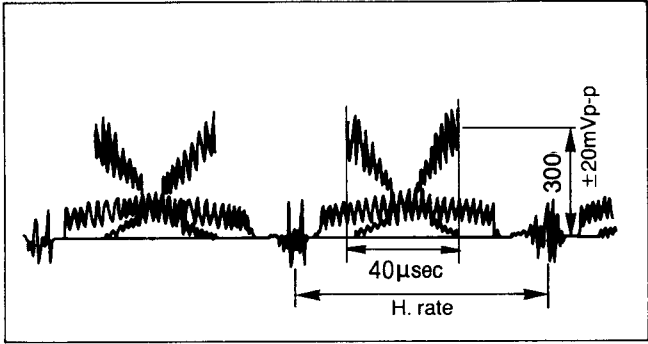


Fig. C10

7. AGC ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
TP2	VR304	NO	GRAY SCALE CHART
M.EQ.		SPEC.	
OSCILLOSCOPE		0.30V $\pm$ 0.02Vp-p	

Note:  
TP2, VR304 : Process C.B.A.

- (1) Aim the camera at the gray scale chart.
- (2) Connect the scope to TP2 and trigger with Pin 12 of B302 (H-Rate).
- (3) Adjust the Camera Unit to obtain 40usec as shown in Fig. C11.
- (4) Adjust the AGC Control (VR304) so that the signal level is 0.30V  $\pm$  0.02Vp-p.

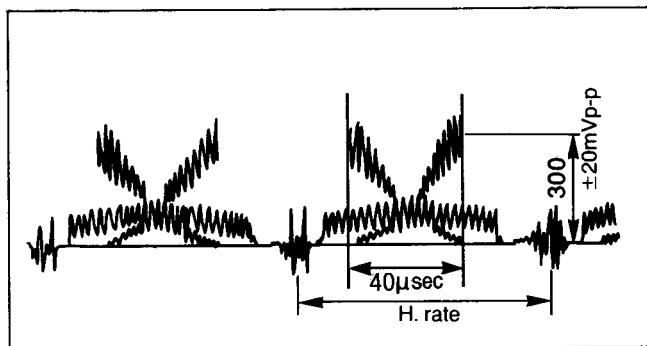


Fig. C11

## 8. YH LEVEL ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
PIN 7 OF FP 301	VR302	NO	GRAY SCALE CHART
M.EQ.	SPEC.		
OSCILLOSCOPE	$A = 1.4V \pm 0.06V_{p-p}$		

Note:

VR302, FP301 : Process C.B.A.

- (1) Connect the jumper wire between TP4, TP5 and TP6.
- (2) Aim the camera at the gray scale chart.
- (3) Connect the scope to Pin 7 of FP301 (Refer to Fig. C13).
- (4) Adjust the YH Level Control (VR302) so that the signal level "A" is  $1.4V \pm 0.06V_{p-p}$  as shown in Fig. C12.
- (5) Disconnect the jumper wire between TP4, TP5 and TP6.

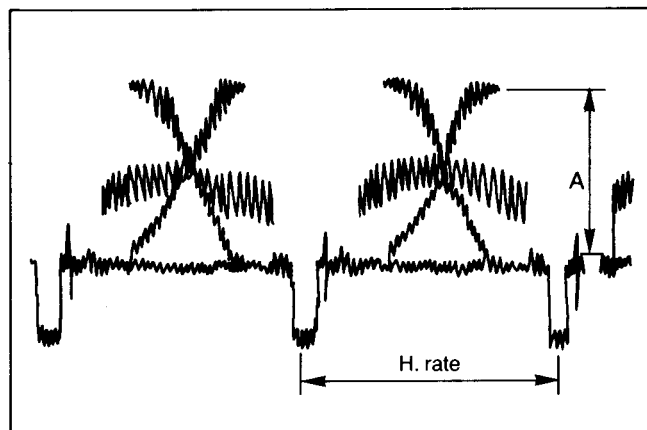


Fig. C12

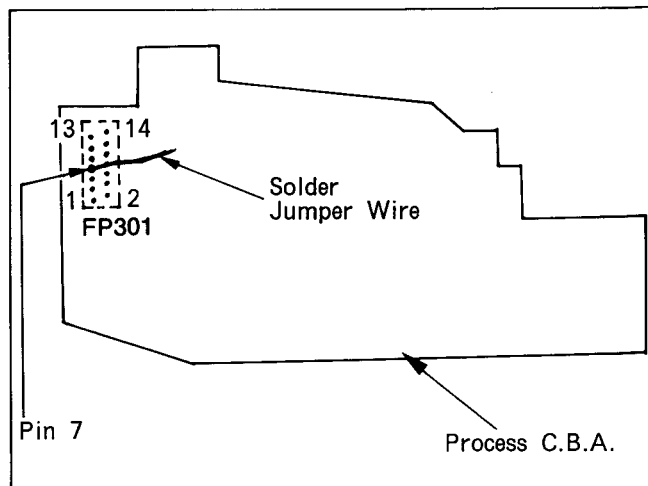


Fig. C13

## 9. WHITE BALANCE ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
VIDEO OUTPUT	VR322, VR323	NO	WHITE CHART
M.EQ.	SPEC.		
VECTORSCOPE	CENTER OF VECTORSCOPE		
OSCILLOSCOPE	WAVEFORM IS MINIMIZED		

Note:

VR322, VR323 : Process C.B.A.

### WITH VECTORSCOPE

- (1) Connect a jumper wire between TP4, TP5 and TP6.
- (2) Aim the camera at the White Chart.
- (3) Supply the video signal to the vectorscope.
- (4) Adjust the White Balance Controls (VR322 and VR323) so that the colour vectors are collected at the center of screen on the vectorscope as shown in Fig. C14.
- (5) Remove the jumper wire between TP4, TP5 and TP6.

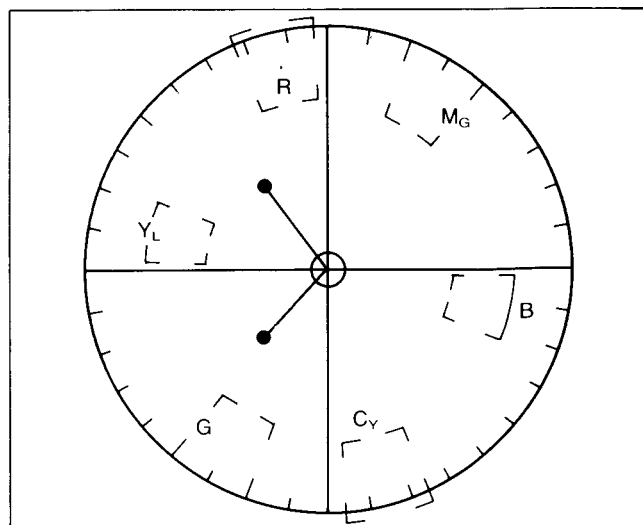


Fig. C14

WITH OSCILLOSCOPE

- (1) Adjustment condition and procedure are same as using vectorscope
- (2) Adjust VR322 and VR323 so that the waveform is minimized.

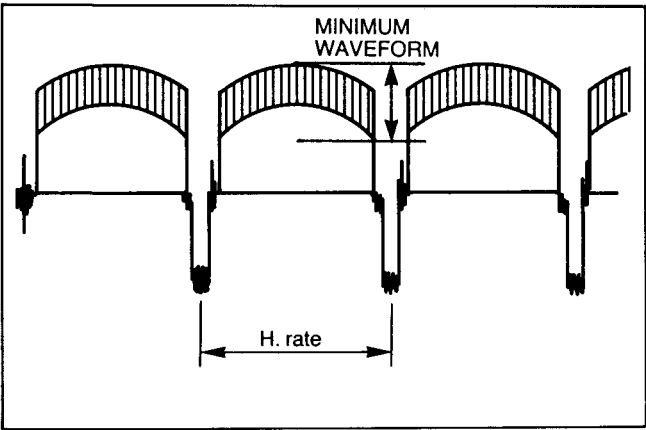


Fig. C15

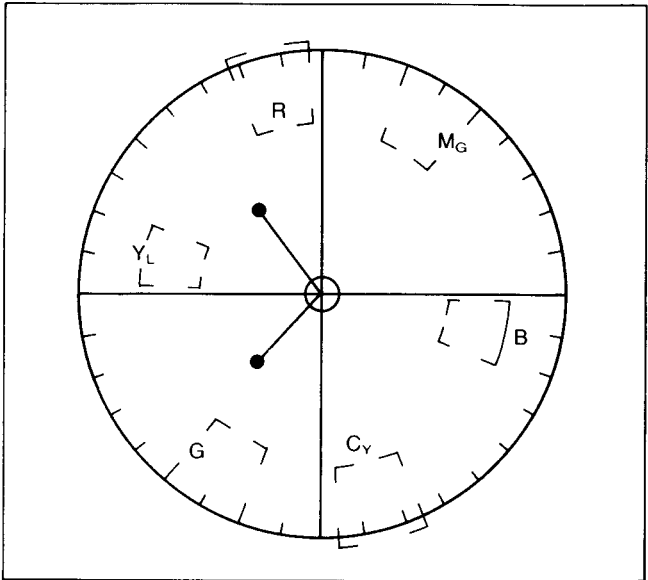


Fig. C16

10. CARRIER BALANCE AND BLACK PEDESTAL ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
VIDEO OUTPUT	VR308 VR318, VR319	YES	
M.EQ.		SPEC.	
VECTORSCOPE		CENTER OF VECTORSCOPE	
OSCILLOSCOPE		WAVEFORM IS MINIMIZED	

Note:  
VR308, VR319, VR318 : Process C.B.A.

WHITH VECTORSCOPE

- (1) Connect the jumper wire between TP4, TP5 and TP6.
- (2) Cover the Camera Lens with the Lens Cap.
- (3) Adjust the Black Pedestal Control (VR308) so that the colour vectors collect at the centre of screen on the vectorscope.
- (4) Connect the jumper wire between TP6 and Pin 7 of BA307
- (5) Adjust the Carrier Balance Controls (VR318 and VR319) so that the colour vectors collect at the centre of screen on the vectorscope.
- (6) Disconnect the jumper wire between TP4, TP5 TP6 and Pin 1 of BA307-1.

WITH OSCILLOSCOPE

- (1) Adjustment condition and procedure are same as using Vectorscope.
- (2) Adjust VR318 and VR319 so that the waveform is minimized.

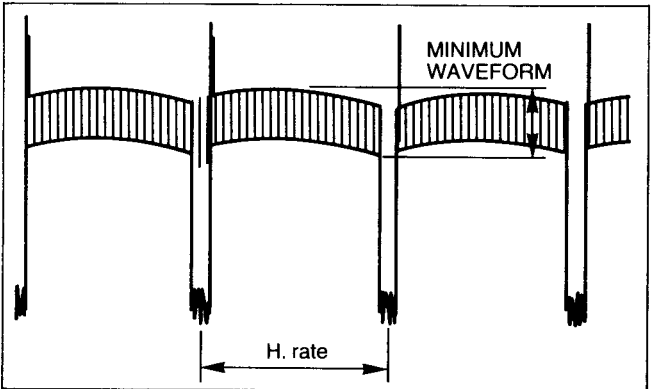


Fig. C17

11. AUTO WHITE BALANCE MODE ADJUSTMENT

Note:  
1) Perform both sections of this procedure.

11-1. AWB AUTO MODE (OUTDOOR) ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
VIDEO OUTPUT	VR312 VR313	NO	WHITE CHART
M.EQ.		SPEC.	
VECTORSCOPE		CENTER OF VECTORSCOPE	
OSCILLOSCOPE		WAVEFORM IS MINIMIZED	

Note:  
VR312, VR313 : Process C.B.A.

#### WITH VECTORSCOPE

- (1) Set the WHITE BALANCE Switch on the Camera Operation Unit to the "OUTDOOR".
- (2) Connect a jumper between TP4, TP5 and TP6.
- (3) Aim the camera at the white chart using a 3200 degrees K Halogen lamp.
- (4) Supply the video signal to the vectorscope.
- (5) Attach the colour temperature conversion filters (VFK0374 and VFK0375) which converts 3200 degrees Kelvin to 5800 degrees Kelvin in front of the Lens (Refer to Note 1 of item).
- (6) If the color temperature conversion filter is not available, use a day light source (Refer to Note 2 of No. 15-3).
- (7) Adjust the W.B. (B-Y) OUTDOOR GAIN and W.B. (R-Y) OUTDOOR GAIN Controls (VR312 and VR313) so that the colour vectors move to the centre of screen on the vectorscope. (Refer to Fig. C19.)
- (8) Remove the colour temperature conversion filter with the fixture from the lens.

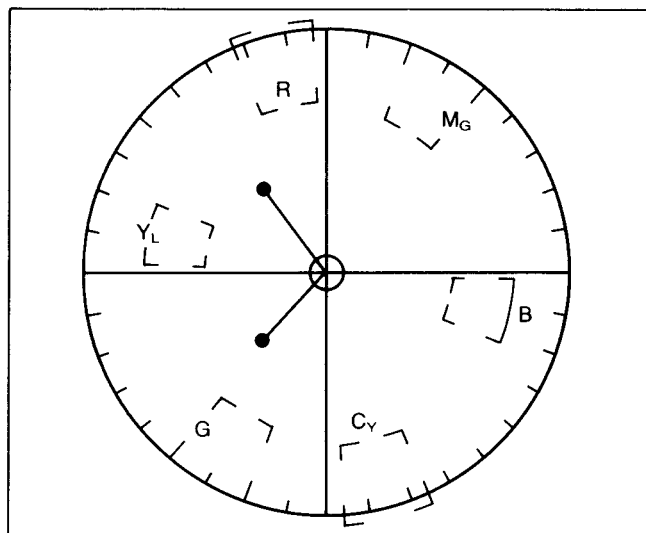


Fig. C18

#### WITH OSCILLOSCOPE

- (1) Adjustment condition and procedure are same as using vectorscope.
- (2) Adjust VR312 and VR313 so that the waveform is minimized.

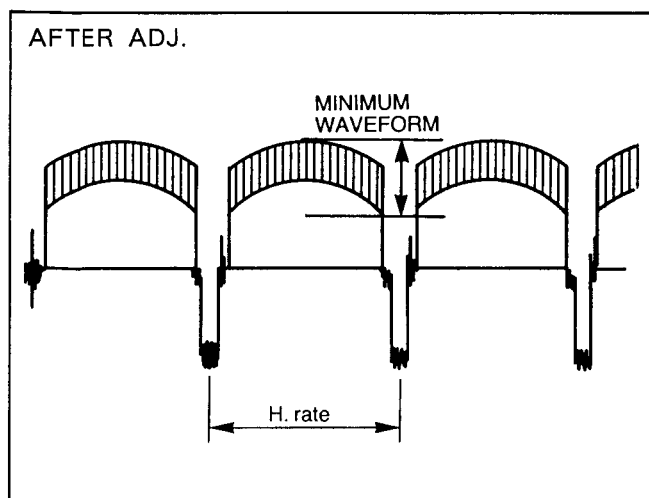


Fig. C20

#### 11-2. AWB AUTO MODE (OFFSET) ADJUSTMENT

TP	ADJ.	LENS CAP	CAHRT
VIDEO OUTPUT	VR314, VR315	NO	GRAY SCALE CHART
M.EQ.	SPEC.		
VECTORSCOPE	CENTER OF VECTORSCOPE		
OSCILLOSCOPE	WAVEFORM IS MINIMIZED		

Note:  
VR314, VR315 : Process C.B.A.

#### WITH VECTORSCOPE

- (1) Set the WHITE BALANCE Switch on the Camera Operation Unit to the "INDOOR".
- (2) Remove the jumper wire between TP4, TP5 and TP6.
- (3) Adjust the W.B. (R-Y OFFSET) and W.B. (B-Y OFFSET) Controls (VR314 and VR315) so that the colour vectors move to the centre of screen on the vectorscope. (Refer to Fig. C20-1.)

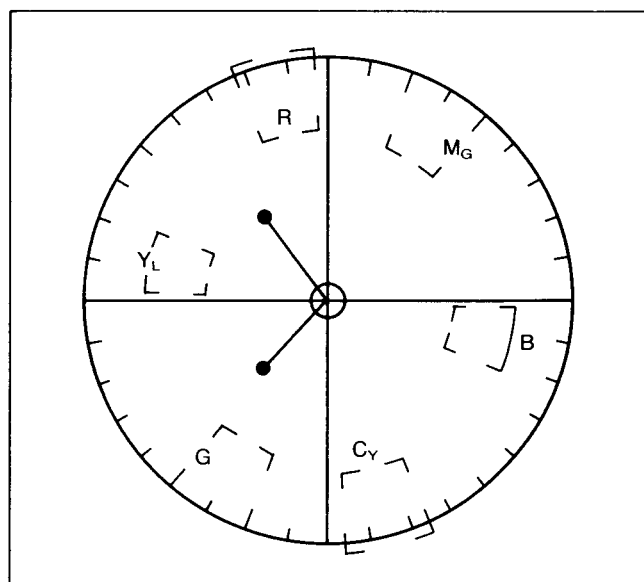


Fig. C20-1

#### WITH OSCILLOSCOPE

- (1) Adjustment condition and procedure are same as using vectorscope.
- (2) Adjust VR314 and VR315 so that the waveform is minimized.

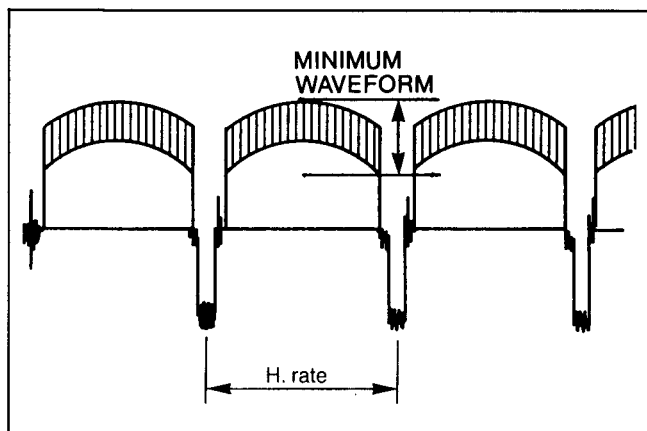


Fig. C21

## 12. COLOUR PHASE AND R-Y/B-Y GAIN ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
VIDEO OUTPUT	VR316, VR317 VR303, VR324	NO	COLOUR CHIP CHART
M.EQ.		SPEC.	
VECTORSCOPE		FIG. C22	

Note:  
VR316, VR317, VR303, VR324 : Process C.B.A.

- (1) Connect a jumper wire between TP4, TP5 and TP6.
- (2) Aim the camera at a colour chip chart.
- (3) Supply the video signal to the vectorscope.
- (4) Adjust the Colour Phase Control (VR303 and VR324), the R-Y Gain Control (VR316) and the B-Y Gain Control (VR317) so that the vector of each colour is as shown in Fig. C22.
- (5) Remove the jumper wire between TP4, TP5 and TP6.

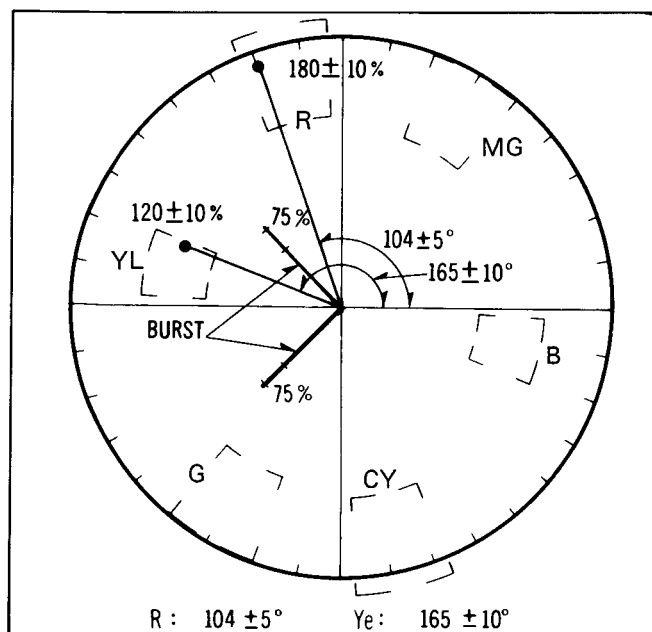


Fig. C22

## 13. HIGH INTENSITY SUPPRESS ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR306	NO	GRAY SCALE CHART
M.EQ.		SPEC.	
TV MONITOR		NO COLOUR INTERFERENCE	

Note:  
VR306 : Process C.B.A.

- (1) Aim the camera at the gray scale chart and focus the lens object.
- (2) Press the back light button and keep as it is.
- (3) Adjust VR306 so that the monitored gray scale chart does not have colour interference.

## 14. LOW LIGHT INDICATION ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
TP12	VR107	NO	WHITE CHART
M.EQ.		SPEC.	
OSCILLOSCOPE		REFER TO FIG. C23.	

Note:  
TP12, VR107 : Process C.B.A.

- (1) Connect the oscilloscope to TP12 and set it in DC mode.
- (2) Shade surface of AWT Sensor with hand and adjust VR107 so that DC level at TP12 is changed from "LOW" to "HIGH"

Note:  
For more accurate adjustment;  
When the illumination of the surface of AWT Sensor is 6lux, the level must be "LOW".  
When the illumination of the surface of AWT Sensor is 3lux, the level must be "HIGH".

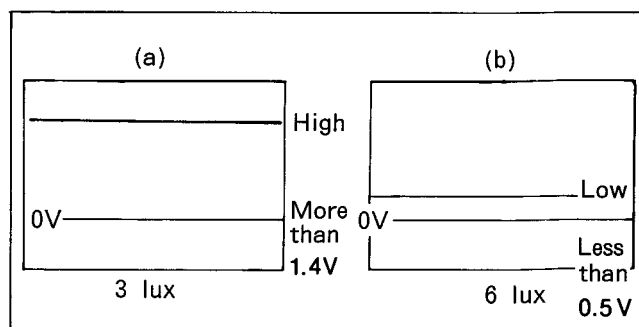


Fig. C23

## 15. AWT MODE ADJUSTMENT

Note:

- 1) Perform all three sections of this procedure.
- 2) Set the WHITE BALANCE Switch on the CAMERA OPERATION UNIT to the "AUTO".

### 15-1. AWT MODE (OFFSET) ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
VIDEO OUTPUT	VR105, VR106	NO	WHITE CHART
M.EQ.		SPEC.	
VECTORSCOPE		CENTER OF VECTORSCOPE	
OSCILLOSCOPE		WAVEFORM IS MINIMIZED	

Note:

VR105, VR106 : Process C.B.A.

WITH VECTORSCOPE

- (1) Aim the camera at the white chart.
- (2) Supply the video signal to the vectorscope.
- (3) Rotate VR101 and VR102 fully clockwise as shown in Fig. C24.

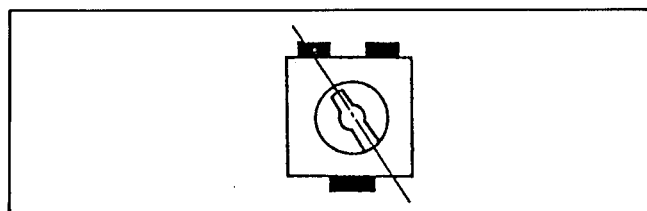


Fig. C24

- (4) Adjust the AWT (R-Y OFFSET) and AWT (B-Y OFFSET) controls (VR105 and VR106) so that the colour vectors move to the centre of screen on the vectorscope. (Refer to Fig. C25.)

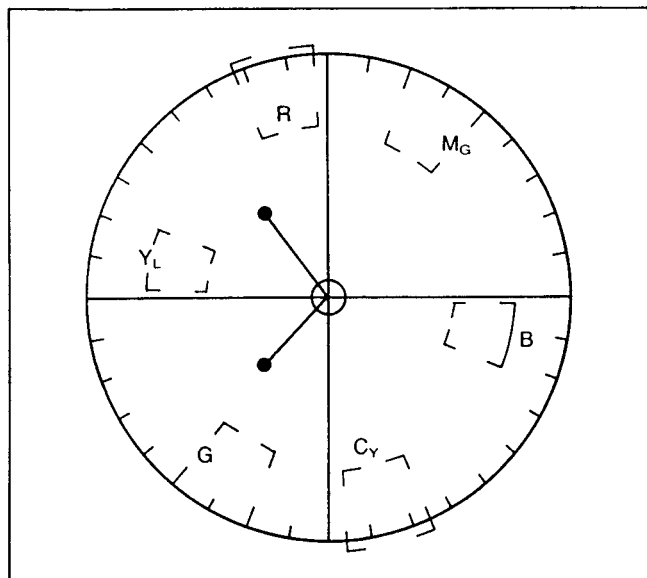


Fig. C25

WITH OSCILLOSCOPE

- (1) Adjustment condition and procedure are same as using vectorscope.
- (2) Adjust VR105 and VR106 so that the waveform is minimized.

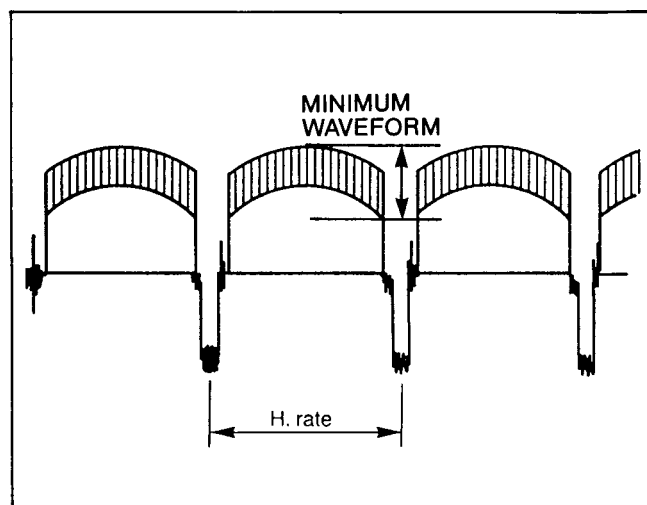


Fig. C26

### 15-2. AWT MODE (GAIN) ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
VIDEO OUTPUT	VR103, VR104, VR105, VR106	NO	WHITE CHART
M.EQ.		SPEC.	
VECTORSCOPE		CENTER OF VECTORSCOPE	
OSCILLOSCOPE		WAVEFORM IS MINIMIZED	

Note:

VR103, VR104, VR105, VR106 : Process C.B.A.

WITH VECTORSCOPE

- (1) Aim the camera at the white chart using a 3200 degrees K Halogen lamp.
- (2) Supply the video signal to the vectorscope.
- (3) Attach the color temperature conversion filter (VFK0375) which converts 3200 degrees Kelvin to 3400 degrees Kelvin in front of the Lens and AWT Sensor. (Refer to Note 1 of item. 15-3)
- (4) If the colour temperature conversion filter is not available, use a day light source. (Refer to Note 2 of item. 15-3)
- (5) Adjust the AWT (R-Y GAIN) and AWT (B-Y GAIN) Controls (VR103 and VR104) so that the color vectors move to the centre of screen on the vectorscope. (Refer to Fig. C27.)



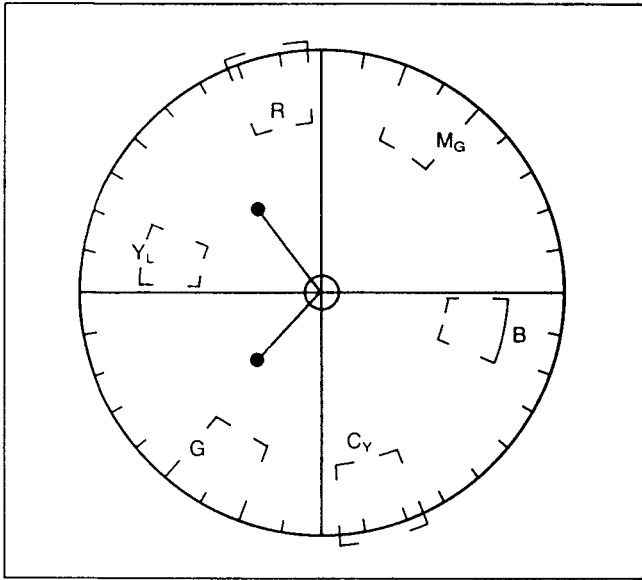


Fig. C27

- (6) Next, remove the colour temperature conversion filter with the fixture from the Lens.
- (7) If the colour vectors do not collect at the centre, adjust the AWT (R-Y OFFSET) and AWT (B-Y OFFSET) Controls (VR105 and VR106) so that the colour vectors move to the centre of screen on the vectorscope.
- (8) Repeat steps (1)-(7) so that the colour vectors collect at the centre of screen on the vectorscope.

**WITH OSCILLOSCOPE**

- (1) Adjustment condition and procedure are same as using vectorscope.
- (2) Adjust VR103, VR104, VR105 and VR106 so that the waveform is minimized.

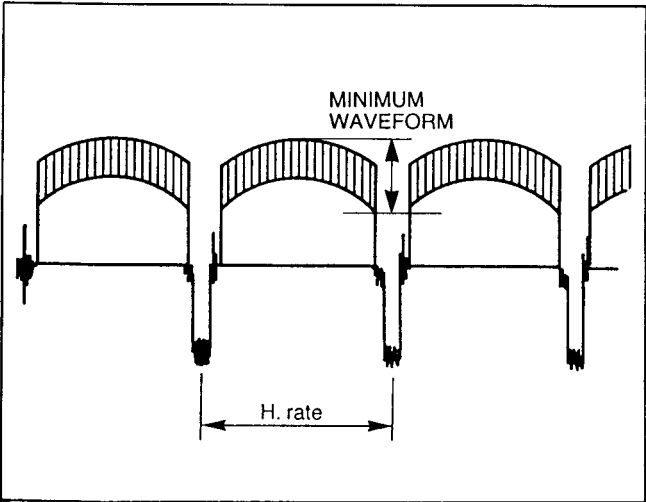


Fig. C28

**15-3. HIGH COLOUR TEMPERATURE ADJUSTMENT**

TP	ADJ.	LENS CAP	CCHART
VIDEO OUTPUT	VR101, VR102	NO	WHITE CHART
M.EQ.		SPEC.	
VECTORSCOPE		CENTER OF VECTORSCOPE	
OSCILLOSCOPE		WAVEFORM IS MINIMIZED	

Note:  
 VR101, VR102 : Process C.B.A.  
 When this adjustment is performed, previous items 15-1 and 15-2 must be completed.

**WITH VECTORSCOPE**

- (1) Aim the camera at the white chart using a 3200 degrees K Halogen lamp .
- (2) Supply the video signal to the vectorscope.
- (3) Attach the colour temperature conversion filters (VFK0374 and VFK0375) which convert 3200 degrees Kelvin to 5800 degrees Kelvin in front of the Lens and AWT Sensor. (Refer to Note 1 of item. 15-3).
- (4) If the colour temperature conversion filters are not available, use a day light source. (Rfer to Note 2 of item. 15-3)
- (5) Adjust the Colour Temperature Clip Controls (VR101 and VR102) so that the colour vectors collect at the centre of screen on the vectorscope.

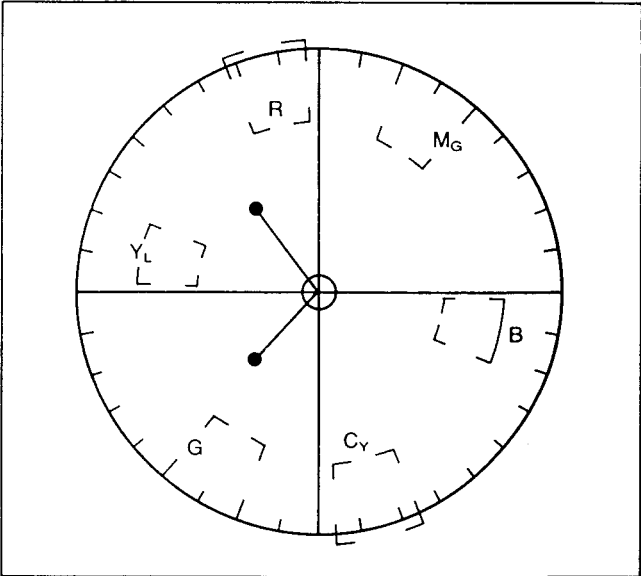


Fig. C29

**WITH OSCILLOSCOPE**

- (1) Adjustment condition and procedure are same as using vectorscope.
- (2) Adjust VR101 and VR102 so that the waveform is minimized.

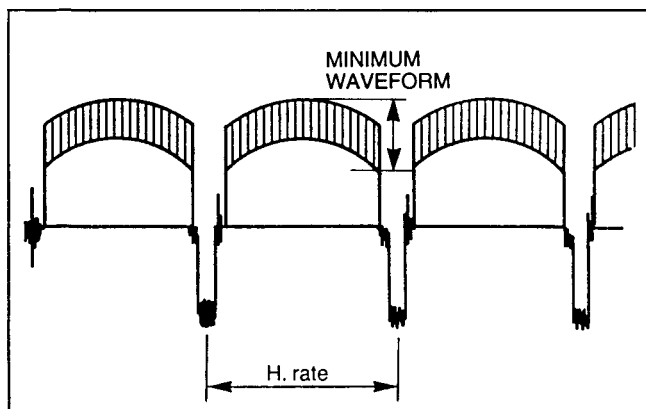


Fig. 30

**Note 1:**

Attach the fixture to the Lens, then attach the colour temperature conversion filter to fixture. It can be procured at a Camera Store. Please construct the fixture using the sheet attached to inside cover page at the back of the Service Manual. (Refer to Fig. C31.)

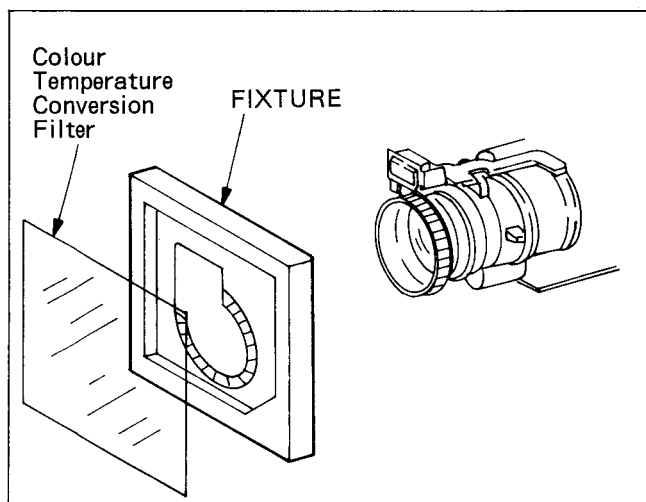


Fig. C31

**Note 2:**

- (1) Aim the camera at a sunny outdoor source (window, etc.).
- (2) Incoming light must be from an outdoor source only; source and illumination on the sensor must be more than 500Lx, and colour temperature must be within 5000 degrees -6000 degrees Kelvin. (Refer to Fig. C26.)

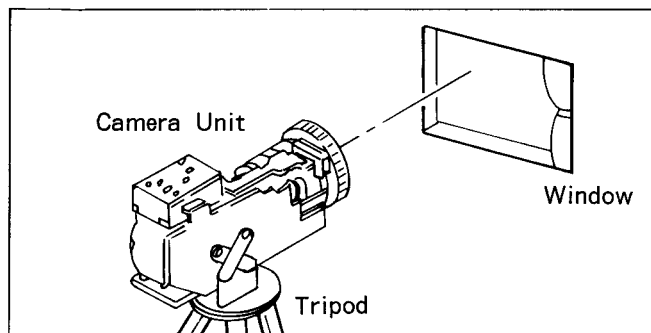


Fig. C32

## AUTO FOCUS SECTION

### PREPARATION

The following adjustments are for the Auto Focus Unit.

- (1) Camera zoom is positioned at the end of TELE side.

### 16. AF GATE ADJUSTMENT

TP	ADJ.	IRIS CAP	CHART
TP602, TP603	C656	NO	
M.EQ.		SPEC.	
OSCILLOSCOPE		1T = 9.6 +- 0.4u-sec.	

**Note:**

TP602, TP603, C656 : AF C.B.A.

- (1) Set the AF Gate Control (C656) as shown in Fig. C33

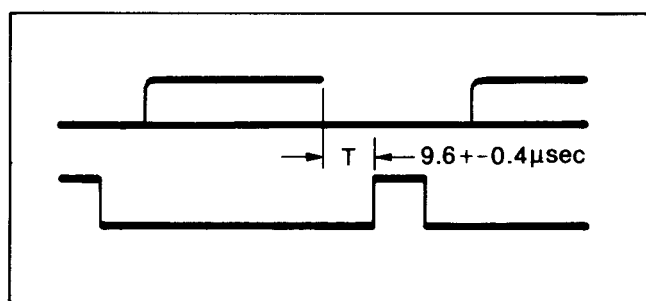


Fig. C33

### 17. BIMOLF GAIN CONTROL ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
TP604	VR603	YES	
M.EQ.		SPEC.	
OSCILLOSCOPE		A = 16V +- 0.5Vp-p	

Note:  
TP604, VR603 : AF C.B.A.

- (1) Set the Focus Switch to the MANUAL position.
- (2) Cover the camera lens with the lens cap.
- (3) Connect the scope to the TP604.
- (4) Adjust the Bimolf Gain Control (VR603) so that the signal level (A) is 16V +- 0.5Vp-p.

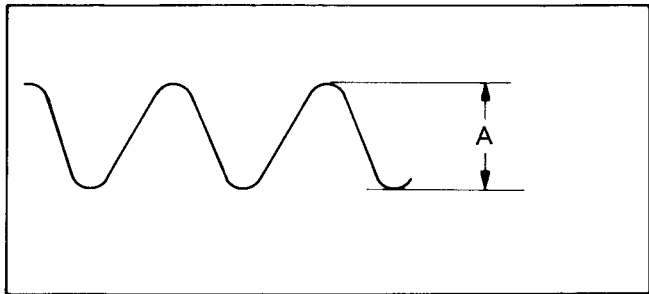


Fig. C34

### 18. AF AMP BIAS GAIN ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
TP3, TP9, TP10, TP11	VR601, VR602	NO	GRAY SCALE CHART
M.EQ.	SPEC.		
D.V.M.	-----		

Note:  
TP3, TP9, TP10, TP11 : Process C.B.A.  
VR601, VR602 : AF C.B.A.

- (1) Connect a jumper wire between TP3 and TP10.
- (2) Adjust the AF AMP BIAS Control (VR601) so that the voltage level at TP9 is 1.74V +- 0.02V.
- (3) Disconnect the jumper wire between TP3 and TP10.
- (4) Next, connect a jumper wire between TP10 and TP11.
- (5) Adjust the AF AMP Gain Control (VR602) so that the voltage Level of TP9 is 3.72V +- 0.05V.
- (6) Disconnect the jumper wire between TP10 and TP11.
- (7) Next, confirm the voltage level at TP9 by connecting a jumper wire between TP3 and TP10.
- (8) If the voltage level at TP9 is not 1.74V +- 0.02V, repeat steps (1) - (6).

TP	ADJ.	LENS CAP	CHART
	DEFLECTION YOKE CENTERING MAGNET	NO	BALL CHART
M.EQ.	SPEC.		
MONITOR TV	CENTER THE PICTURE		

### 19. AF VH FREQUENCY ADJUSTMENT

TP	ADJ.	IRIS CAP	CHART
TP605	C621	NO	WHITE/GRAY CHART
M.EQ.	SPEC.		
OSCILLOSCOPE	A = 1.0 +- 0.04Vp-p		

Note:  
TP605, TP611, C621 : AF C.B.A.

Zoom : TELE Side  
Focus: AUTO

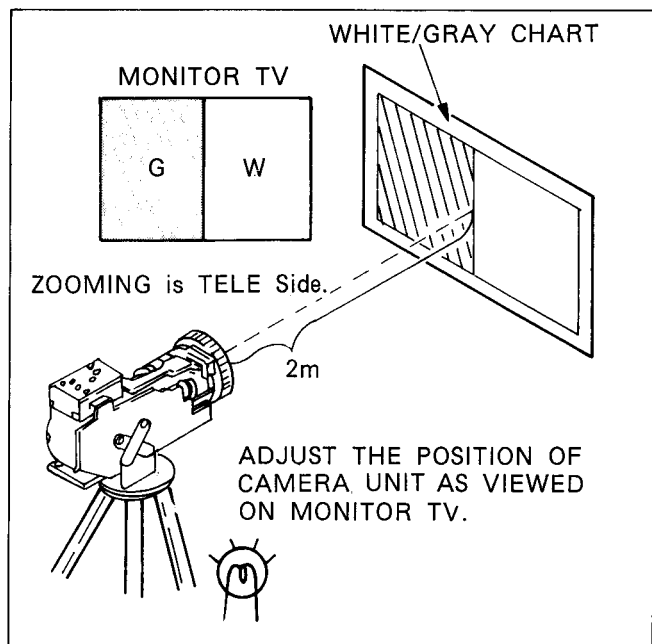


Fig. C35

- (1) Aim the Camera at the White/Gray Chart attached to inside of this Service Manual.
- (2) Confirm that the voltage at TP611 is 2.2V +- 0.1V.
- (3) If the Voltage at TP611 is not 2.2V +- 0.1V, adjust the light source so that the voltage at TP611 is 2.2V +- 0.1V.
- (4) Adjust the C621 so that the "A" level at TP605 is 1.0 +- 0.05Vp-p.

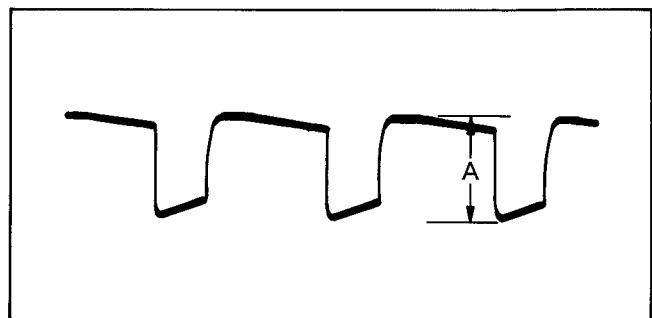


Fig. C36

## 2-4-2. ELECTRICAL ADJUSTMENT FOR E.V.F. SECTION

### PREPARATION

The following adjustments are for the Electronic Viewfinder.

- (1) Connect the Viewfinder plug to the E.V.F. connector on the unit.
- (2) The camera circuit must be completely aligned before viewfinder adjustments are made.

#### 1. H-OSC ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
Pin2 of P701	VR702	NO	BALL CHART
M.EQ.		SPEC.	
FREQUENCY COUNTER		15.6KHz $\pm$ 0.1KHz	

Note:

P701, VR702 : E.V.F. C.B.A.

- (1) Connect the scope to Pin2 of P701, use DC
- (2) Adjust the H-OSC (VR702) so that the frequency is 15.8  $\pm$  0.1 KHz.

#### 2. CENTERING ADJUSTMENT

- (1) Aim the camera at the registration chart.
- (2) Adjust the Deflection Yoke Centering Magnets by turning them so that the picture on monitor TV is centered.

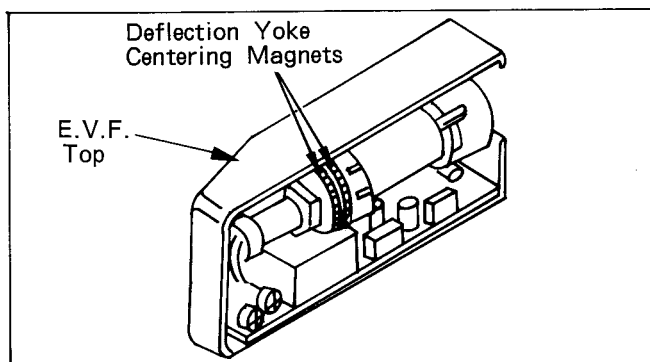


Fig. C39

#### 3. FOCUS ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR704	NO	BALL CHART
M.EQ.		SPEC.	
VIEWFINDER		BEST RESOLUTION	

Note:

VR704 : E.V.F. C.B.A.

- (1) Aim the camera at the Ball chart.
- (2) Adjust the focus control (VR704) for best resolution in the viewfinder.

#### 4. V.SIZE ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR701	NO	GRAY SCALE CHART
M.EQ.		SPEC.	
VIEWFINDER		VERTICAL SIZE IS FIXED.	

Note:

VR701 : E.V.F. C.B.A.

- (1) Aim the camera at the gray scale chart.
- (2) Adjust the Vertical Size (VR701) so the Vertical Size is correct and the picture does not roll as shown in Fig. C40.

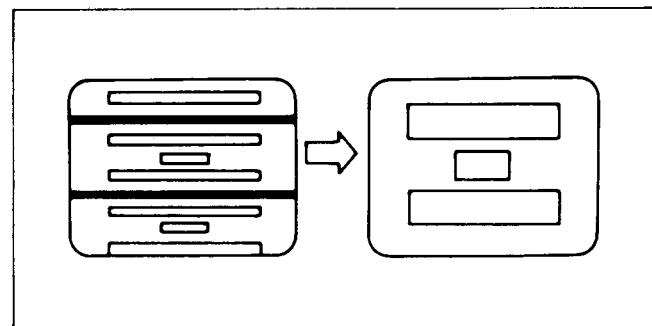


Fig. C40

#### 5. BRIGHTNESS ADJUSTMENT

TP	ADJ.	LENS CAP	CHART
	VR705	NO	GRAY SCALE CHART
M.EQ.		SPEC.	
VIEWFINDER		NATURAL GRADATION	

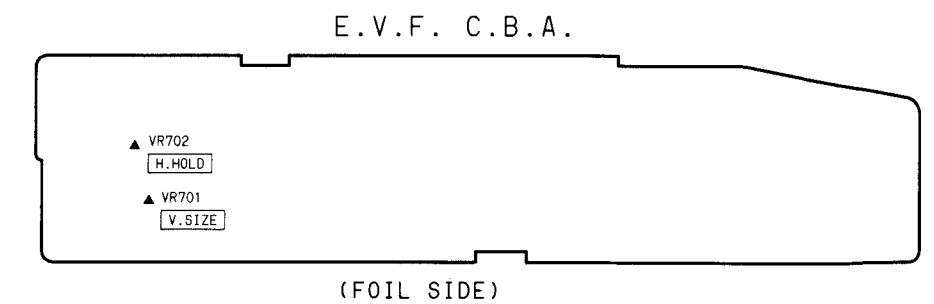
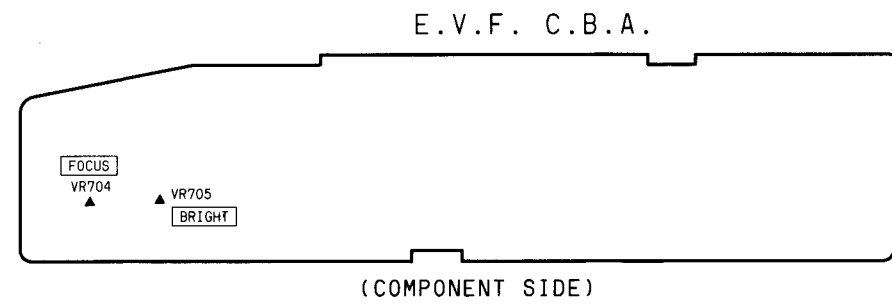
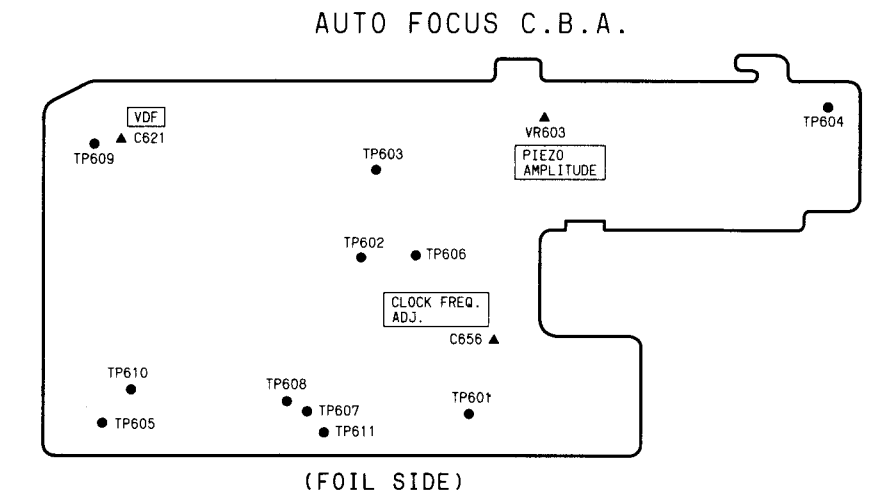
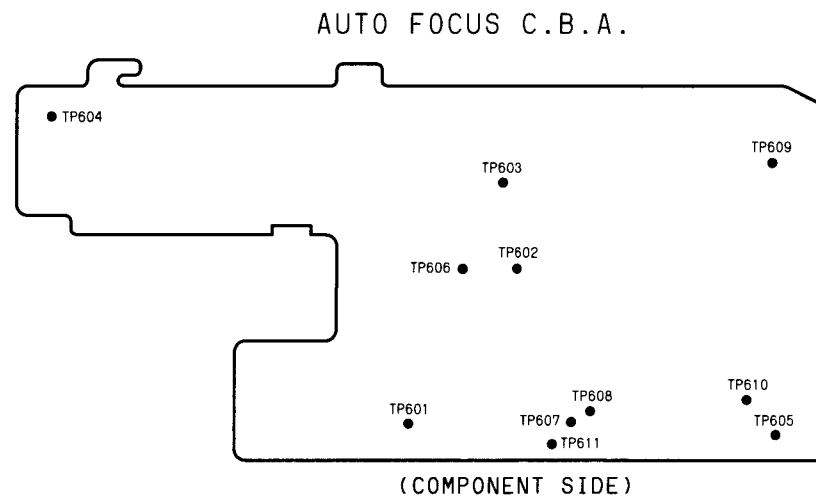
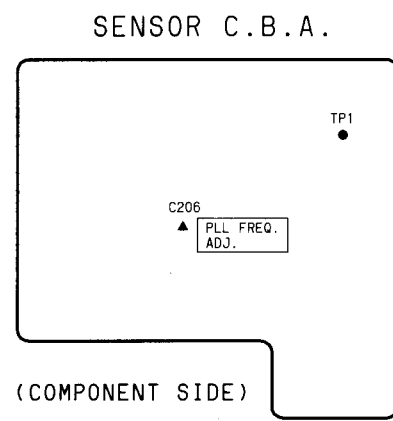
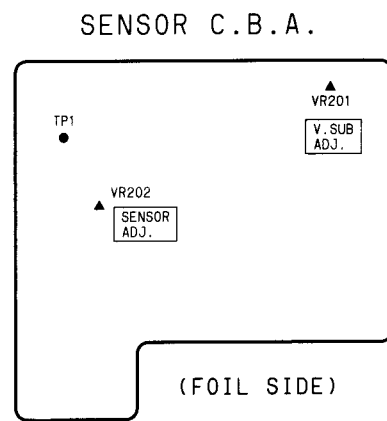
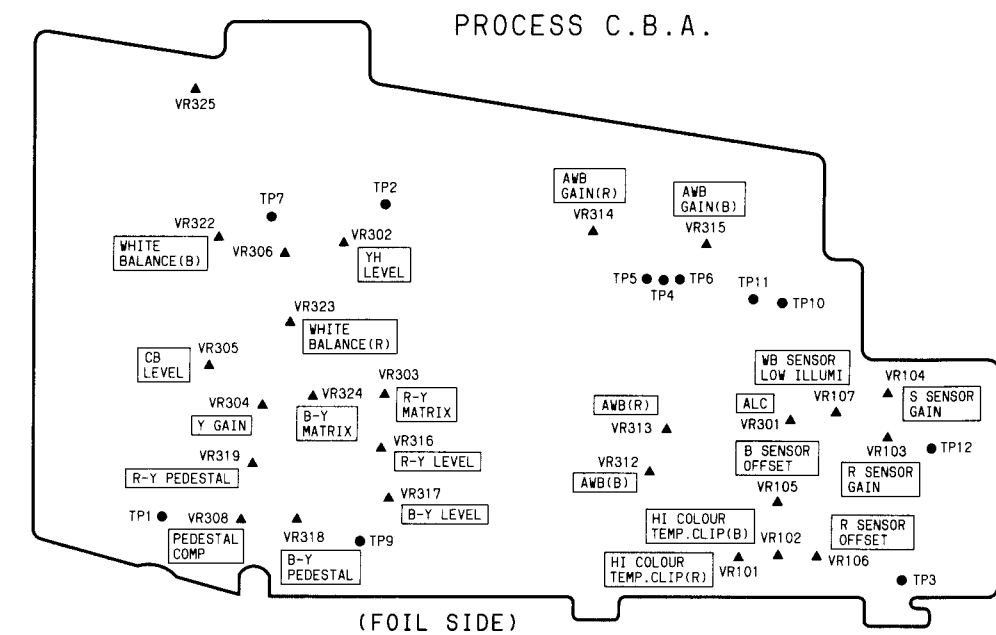
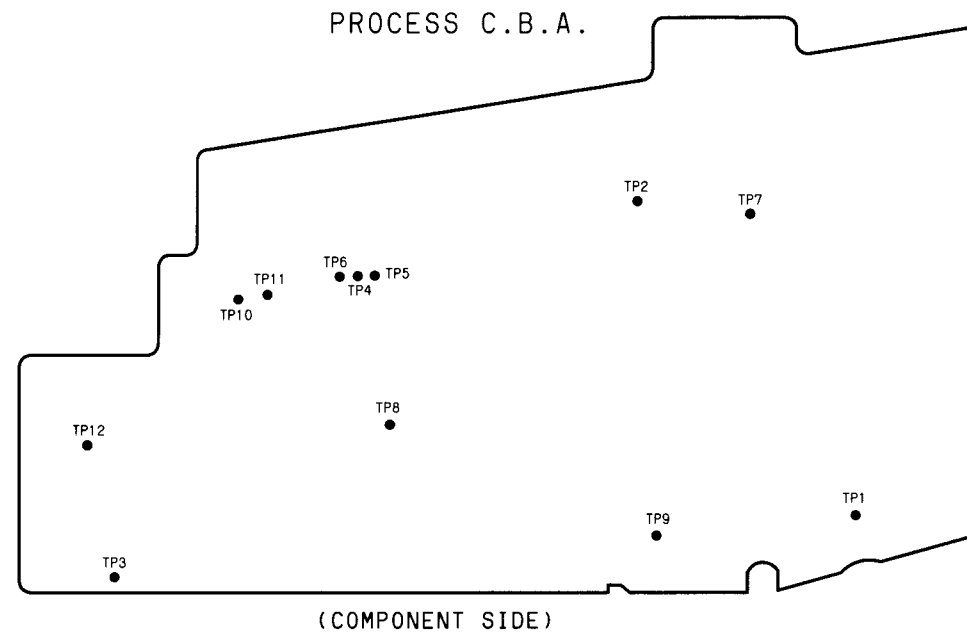
Note:

VR705 : E.V.F. C.B.A.

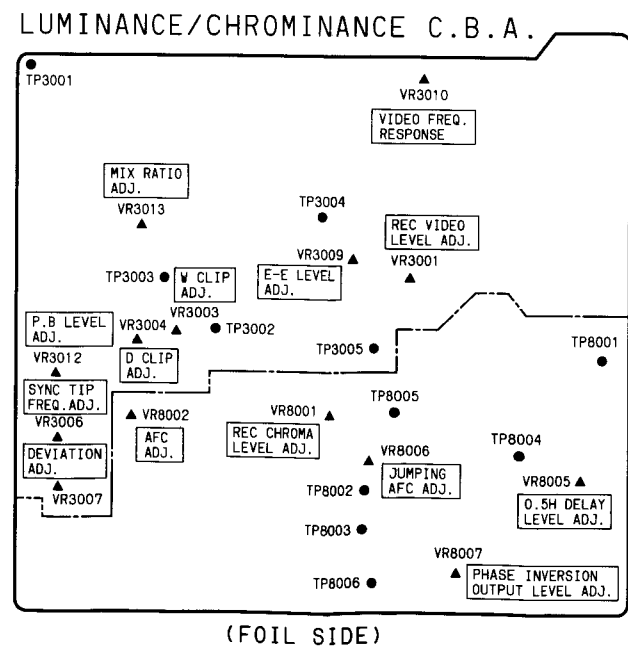
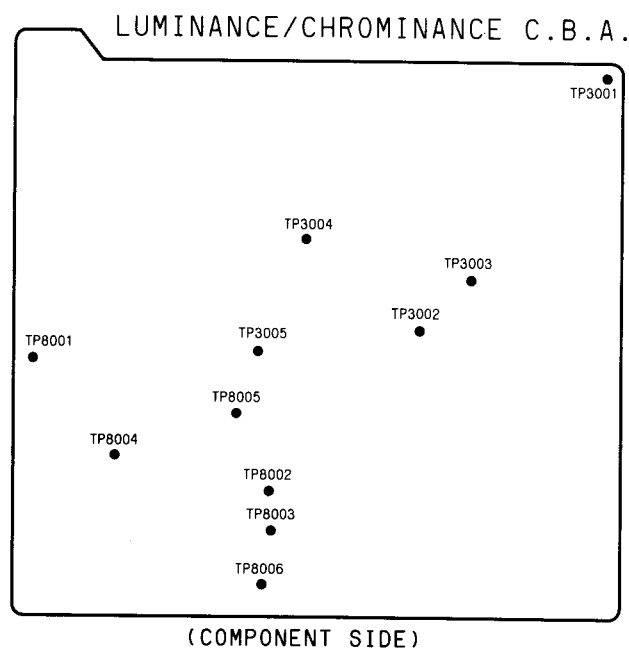
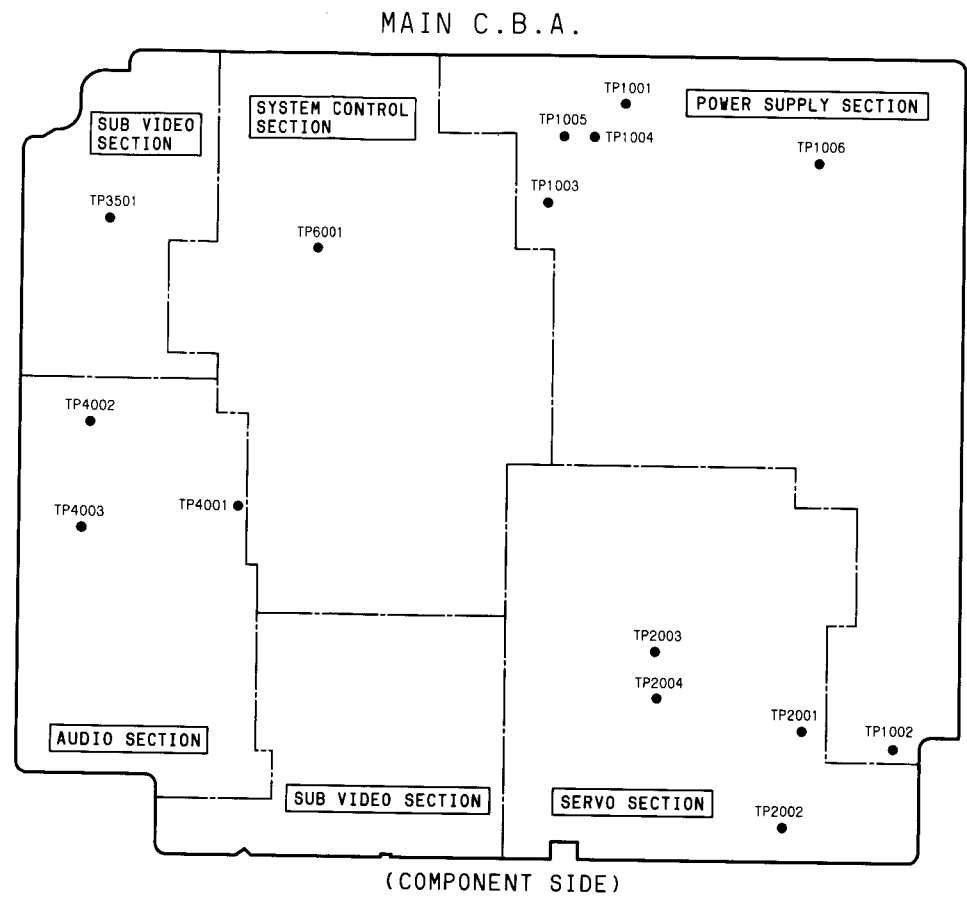
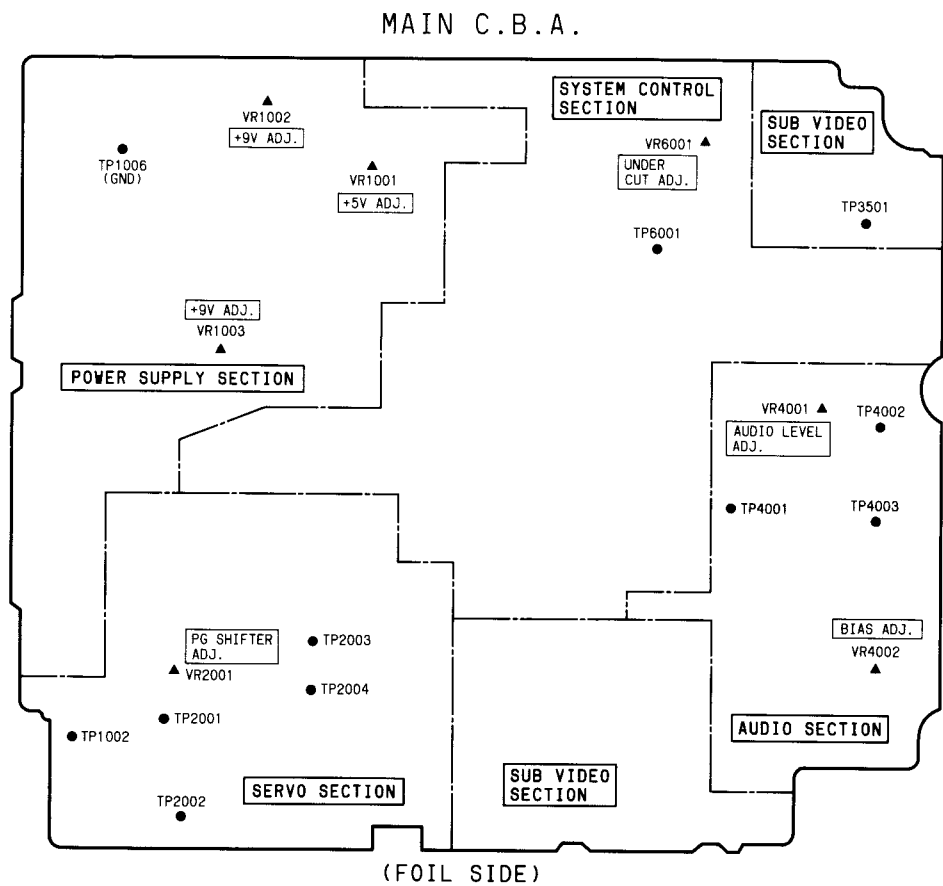
- (1) Aim the camera at the gray scale chart.
- (2) Adjust the Brightness Control (VR705) so that the black and white Bars in the E.V.F. screen are the same as they are in the monitor TV screen.



### LOCATION OF TEST POINTS & CONTROLS — Camera Section —



LOCATION OF TEST POINTS & CONTROLS — VTR Section —



2-4-3. ELECTRICAL ADJUSTMENT FOR VTR SECTION

TEST EQUIPMWNT AND TOOLS

The following equipment is required for adjustment of the VTR section of VHS-C Movie

1. D.V.M (Digital Volt Meter)  
Voltage Range : 0.001 ~ 50V
2. Dual Trace Oscilloscope  
Voltage Range : 0.005 ~ 50V/div.  
Frequency Range : DC ~ 10MHz  
Probe : 10 : 1 or 1 : 1
3. Frequency Counter.  
Frequency Range :
4. Signal Generator (Sinewave)  
Frequency Range : 0 ~ 10MHz
5. Video Sweep Generator  
Frequency Range : 0 ~ 10MHz
6. AC Millivolt Meter  
Voltage Range : 0 ~ 1Vrms.
7. Plastic Tip Driver
8. VHS-C Alignment Tape (VMF8180H3PF)
9. Y/C Separator (VFK0304)
10. Extension Cable  
W16pin Extension Cable (VFK0429)  
W20pin Extension Cable (VFKS0067)  
4pin Extension Cable (VFKS0068) --- 2pcs.  
14pin Flexible Cable (VFK0430)  
Y/C Separator Connection Cable (VFKS0074)

POWER SECTION

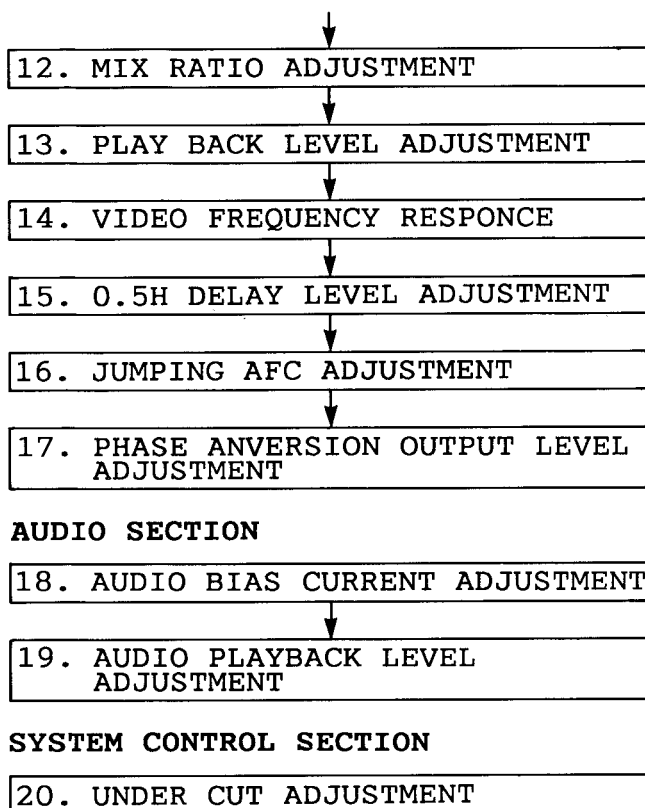
1. REG.+5V DC ADJUSTMENT
2. REG.+9V DC ADJUSTMENT
3. CAMERA REG.+9V DC ADJUSTMENT

SERVO SECTION

4. PG SHIFTER ADJUSTMENT

VIDEO SECTION

5. E-E LEVEL ADJUSTMENT
6. SYNC TIP FREQUENCY ADJUSTMENT
7. DEVIATION ADJUSTMENT
8. WHITE AND DARK CLIP ADJUSTMENT
9. REC CHROMA LEVEL ADJUSTMENT
10. REC VIDEO LEVEL ADJUSTMENT
11. AFC ADJUSTMENT



Condition :  
 Before this adjustment, "REG. +5V DC ADJUSTMENT" must be completed.  
 Do not connect AC Adaptor. Connect a DC Power Supply to DC Jack + (+) and GND (-), then supply the voltage  $9.6 \pm 0.5V$

### 3. CAMERA REG.+9V DC ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP1003	VR1003	CAMERA REC	9.6+-0.5V DC (To DC Jack by AC Adaptor)
TAPE	M.EQ.	SPEC.	
BLANK TAPE	D.V.M.	8.6+0.07V-0.03V	

Confirm the following voltages  
 TP1004 ---  $15.2 \pm 0.3V$   
 TP1005 ---  $-7.7 \pm 0.3V$

Condieion :  
 Befor this adjustment, "REG. +9V DC ADJUSTMENT" must be completed.  
 Do not connect AC Adaptor. Connect a DC Power Supply to DC Jack + (+) and GND (-), then supply the voltage  $9.6 \pm 0.5V$

### POWER SECTION

#### 1. REG.+5V DC ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP1001	VR1001	CAMRA REC	10.5+-0.5V DC (To DC Jack by DC Power Supply)
TAPE	M.EQ.	SPEC.	
BLANK TAPE	DC Power Supply D.V.M.	4.91+-0.025V	

Condition :  
 Do not connect AC Adaptor. Connect a DC Power Supply to DC Jack + (+) and GND (-), then supply the voltage  $10.5 \pm 0.5V$

#### 2. REG.+9V DC ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP1002	VR1002	CAMRA REC	9.6+-0.5V DC (To DC Jack by AC Adaptor)
TAPE	M.EQ.	SPEC.	
BLANK TAPE	D.V.M.	8.7+-0.05V	

### SERVO SECTION

#### 4. PG SHIFTER ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP2001 LINE OUT	VR2001	SP MODE PLAY BACK	
TAPE	M.EQ.	SPEC.	
ALIGNMENT TAPE (VFM8180H3PF)	OSCILLO SCOPE	T=6.5+-0.5H (0.42+-0.03msec)	

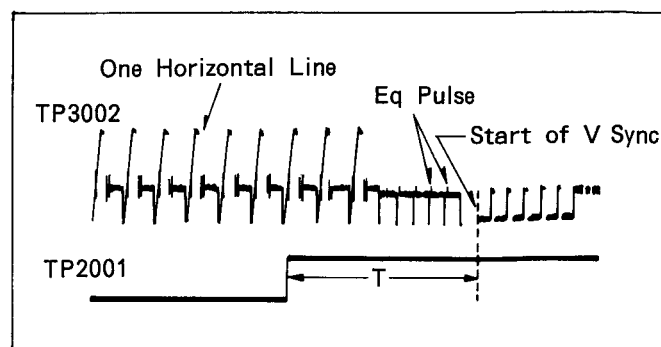


Fig. E1



## VIDEO SECTION

### 5. E-E LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT	VR3009	STOP	COLOUR BAR
TAPE	M.EQ.		SPEC.
	OSCILLOSCOPE		$A=2.0\pm 0.1V_{pp}$

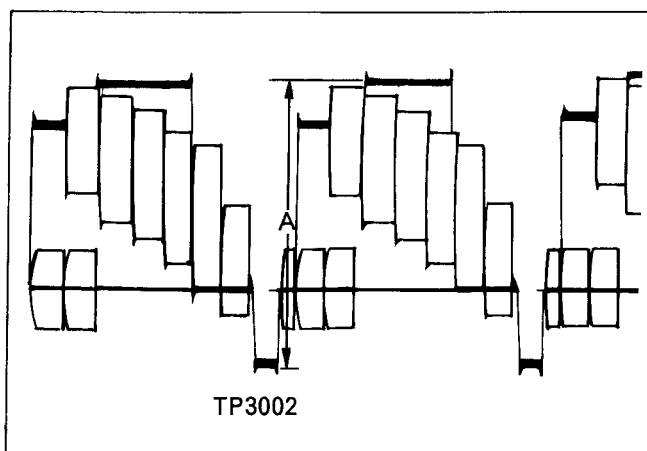


Fig. E2

### 6. SYNC TIP FREQUENCY ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP3002	VR3006	SP MODE RECORDING	NO SIGNAL
TAPE	M.EQ.		SPEC.
BLANK TAPE	FREQUENCY COUNTER		$3.9MHz\pm 50KHz$

### 7. DEVIATION ADJUSTMENT

TP	ADJ.	MODE	INPUT
Pin 2 of P5503 (HOT) Pin 1 of P5503 (GND) (TRIGGER TP2001)	VR3007	SP MODE RECORDING	COLOUR BAR
TAPE	M.E.M.EQ.		SPEC SPEC.
BLANK TAPE	SIGNAL GENERATOR OSCILLOSCOPE FREQUENCY COUNTER		INNER BEAT IS MAXIMUM.

- Connect a signal generator (sinewave) to TP3002 through a resistor (1Kohm). Set the frequency and the output level of the signal generator.  
Frequency :  $4.9MHz \pm 50KHz$   
Output level :  $0.1V_{p-p}$
- Connect the probe to TP3501 (HOT) on the Head Amp Unit through a resistor (1Kohm).
- Adjust VR3007 so that the inner beat at white portion of colour bar becomes maximum.

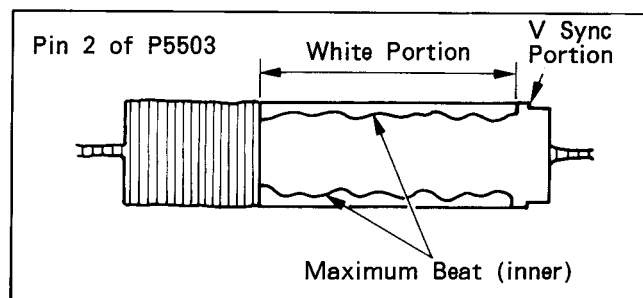


Fig. E3

(Misadjustment)

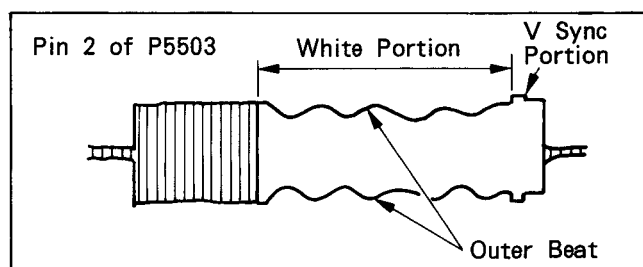


Fig. E4

8. WHITE AND DARK CLIP ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP3003	VR3003: A (WHITE CLIP) VR3004: B (DARK CLIP)	STOP	COLOUR BAR
TAPE	M.EQ.	SISPEC.	
	OSCILLOSCOPE	A=184+ $\pm$ 5% B=160+ $\pm$ 5%	

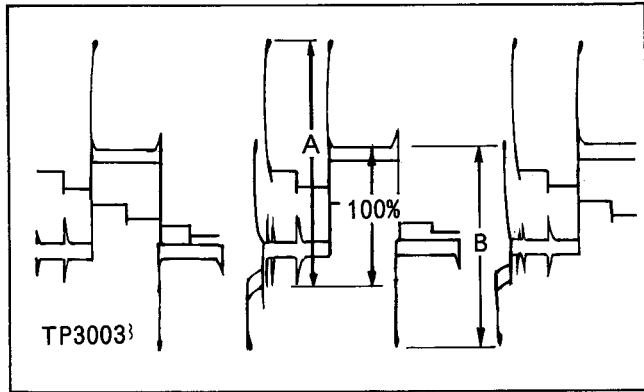


Fig. E5

9. REC CHROMA LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
Pin 2 of P5503 (HOT) Pin 1 of P5503 (GND)	VR8001	LP MODE RECOR- DING	COLOUR BAR
TAPE	M.EQ.	SPSPEC.	
BLANK TAPE	OSCILLOSCOPE	A=28+ $\pm$ 4mVp-p (CYAN)	

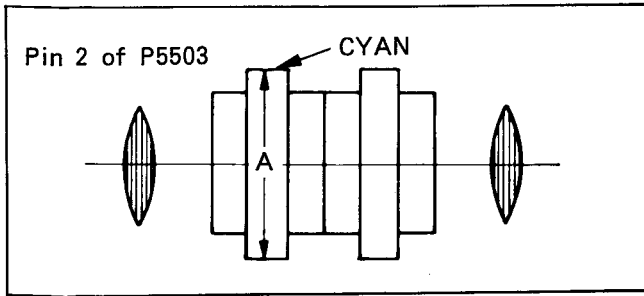


Fig. E6

Condition :  
Connect TP3001 to GND.

10. REC VIDEO LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
Pin 2 of P5503 (HOT) Pin 1 of P5503 (GND)	VR3001	LP MODE RECOR- DING	COLOUR BAR
TAPE	MM.EQ.	SPEC.	
BLANK TAPE	OSCILLO- SCOPE	A=120+ $\pm$ 5mVp-p	

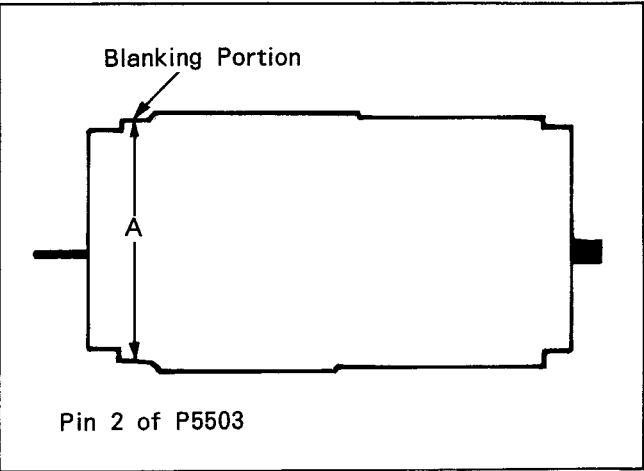


Fig. E7

11. AFC ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP8006	VR8002	STOP	COLOUR BAR
TAPE	M.EQ.	SPEC.	
	D.V.M.	2.44+ $\pm$ 0.015V	

## 12. MIX RATIO ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP3004	VR3013	SP MODE SELF RECORDING AND PLAYBACK	COLOUR BAR
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE		A=LESS THAN 16mVp-p <sup>100kHz</sup>

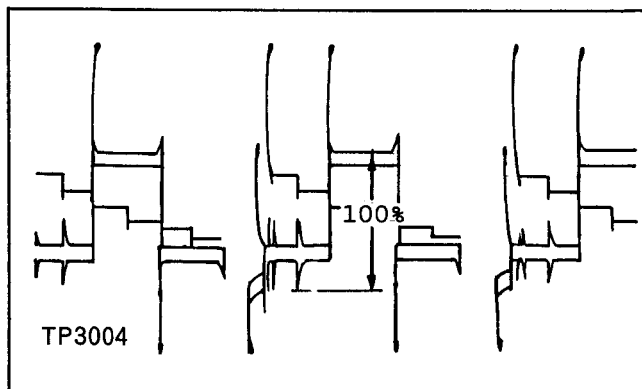


Fig. E8

## 13. PLAY BACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT	VR3012	SP MODE SELF RECORDING AND PLAYBACK	COLOUR BAR
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLO- SCOPE		A=1.0+/-0.05Vp-p B=0.5+/-0.15Vp-p

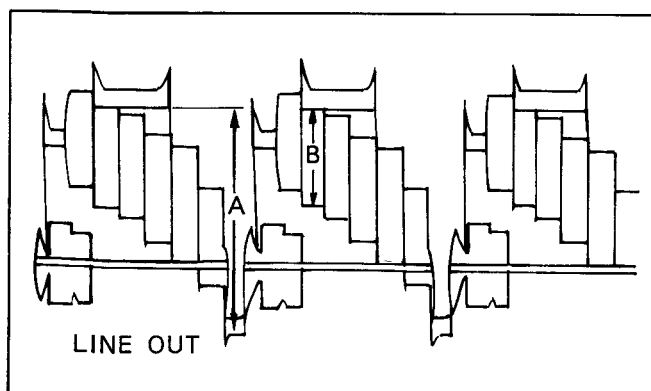


Fig. E9

## 14. VIDEO FREQUENCY RESPONSE ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT	VR3010	SP MODE SELF RECORDING AND PLAYBACK	RF SWEEP SIGNAL
TAPE	M.EQ.		SPEC.
BLANK TAPE	VIDEO SWEEP GEN. OSCILLOSCOPE		A: B=0dB (A=B)

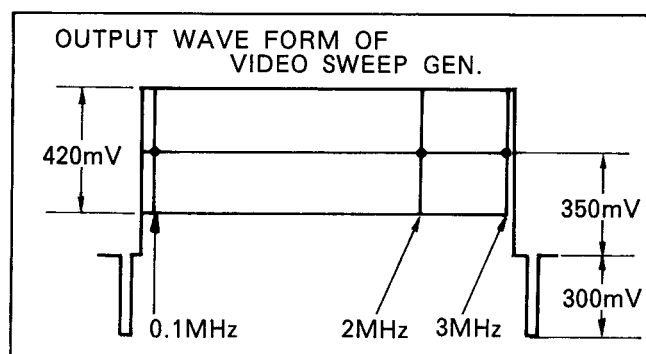


Fig. E10

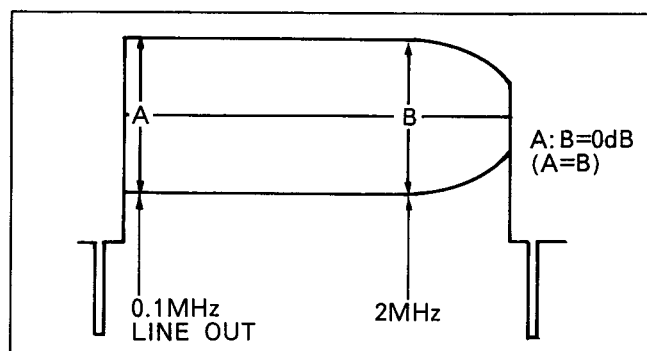


Fig. E11

## 15. 0.5H DELAY LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP8001	VR8005	LP MODE SELF RECORDING AND PLAYBACK	COLOUR BAR
TAPE	M.EQ. .		SPEC.
BLANK TAPE	OSCILLOSCOPE		A=2.0+/- 0.1Vp-p

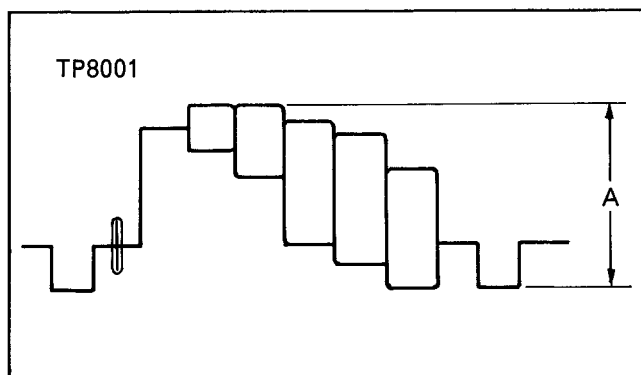


Fig. E12

#### 16. JUMPING AFC ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP8003	VR8006	LP MODE PLAYBACK	
TAPE	M.EQ.		SPEC.
BLANK (NON- RECORDED)	FREQUENCY COUNTER		22.2KHz $\pm$ 100Hz

Condition :

Make short jumper between pin14 of P3001 and TP8002 through 10Kohm resistor.

#### 17. PHASE ANVERSION OUTPUT LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT	VR8007	LP MODE SELF RECORDING AND PLAYBACK	COLOUR BAR
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE VIDEO PATTERN GEN.		A-B=0 $\pm$ 30mVp-p

- (1) Connect the oscilloscope at LINE OUT and read A as the peak to peak level.
- (2) Connect TP8004 and TP8005 to the GND and read B as the peak to peak level.
- (3) Adjust VR8007 so that A-B becomes 0  $\pm$  30mVp-p.

### AUDIO SECTION

#### 18. AUDIO BIAS CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP4002 (HOT) TP4003 (GND)	VR4002	SP MODE RECORDING	NO SIGNAL
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE or AC MILLIVOLT METER		7. $\pm$ 0. mVp-p or 2.7 $\pm$ 0.1mVrms

#### 19. AUDIO PLAYBACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP4001	VR4001	SP MODE SELF RECORDING AND PLAYBACK	(AUDIO MIC IN) 1KHz, -60dB
TAPE	M.EQ.		SPEC.
BLANK TAPE	SIGNAL GENERATOR AC MILLIVOLT METER or OSCILLOSCOPE		-8 $\pm$ 1dB

### SYSTEM CONTROL SECTION

#### 20. UNDER CUT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP6001	VR6001	CAMERA RECORDING	8.8 $\pm$ 0.05V (To P1001)
TAPE	M.EQ.		SPEC.
	DC POWER SUPPLY UNIT D.V.M. OSCILLOSCOPE		

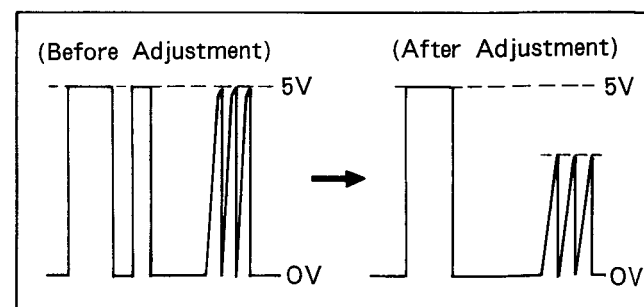


Fig. E13

Condition :

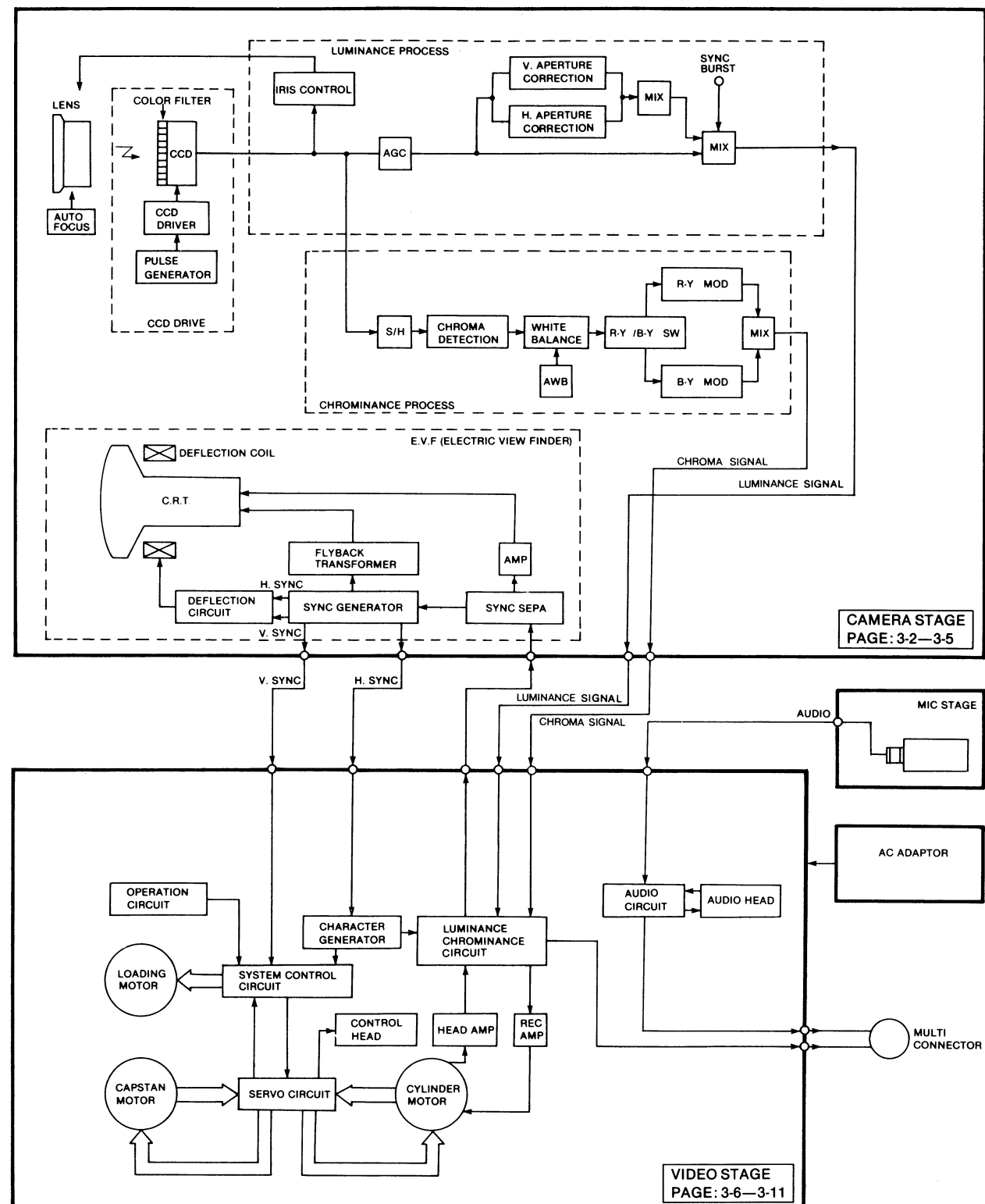
Do not connect AC Adaptor, Connect a DC Power Supply to pin1 (-) and Pin2 (+) of P1001, then supply the voltage 8.8  $\pm$  0.05V DC.

## SECTION 3

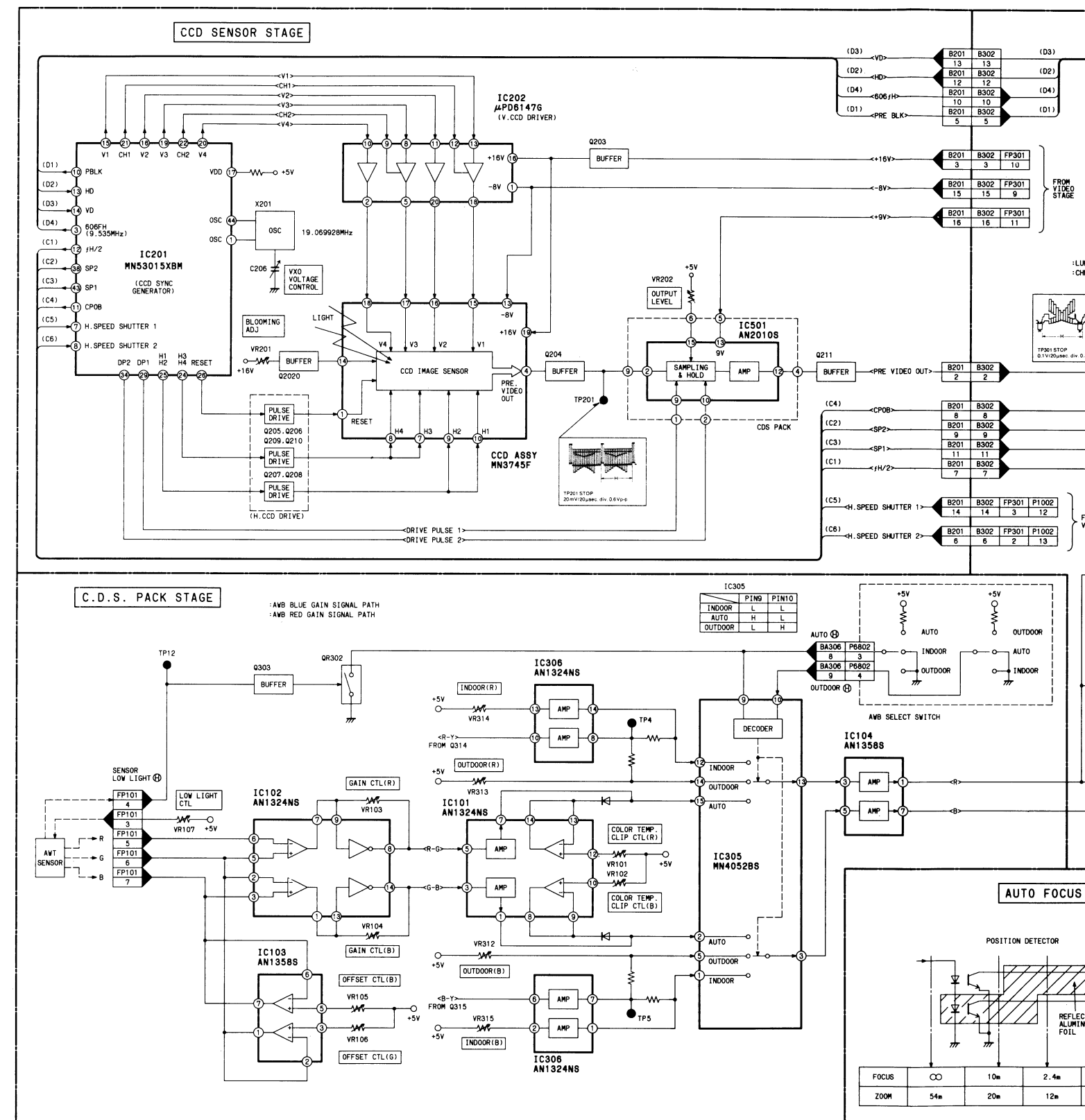
### BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS

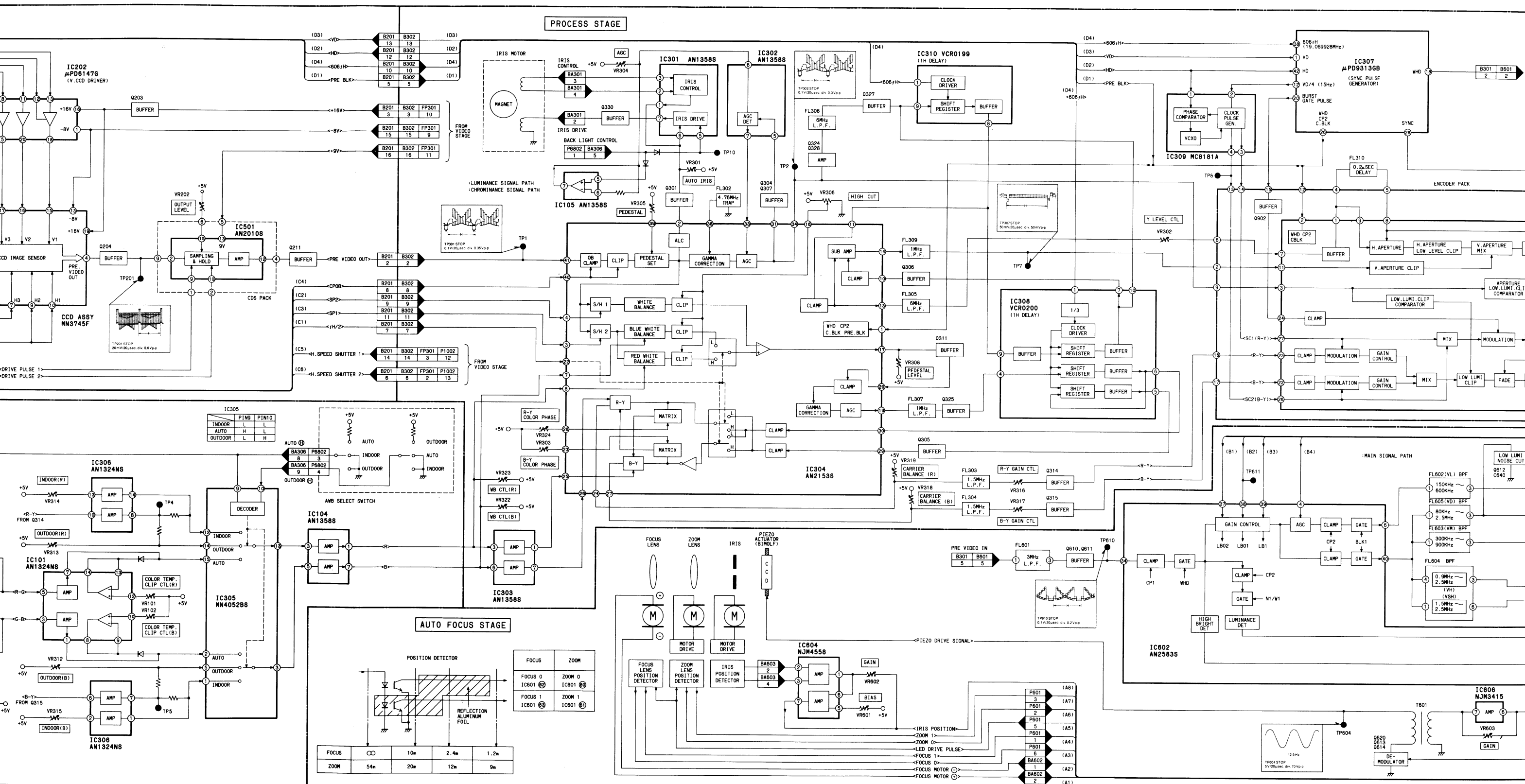
#### 3-1. OVERALL BLOCK DIAGRAM

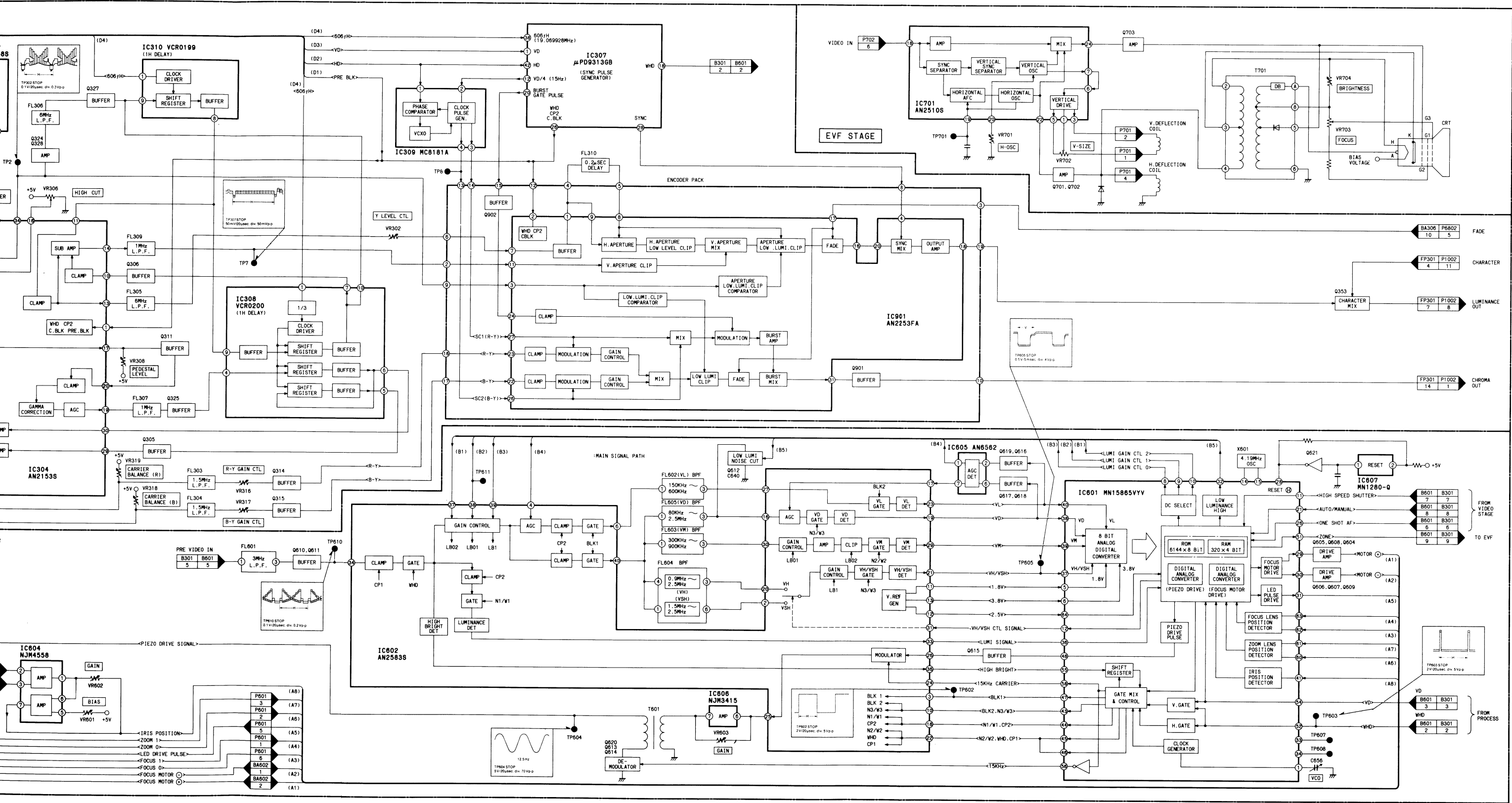
### 3-1. OVERALL BLOCK DIAGRAM



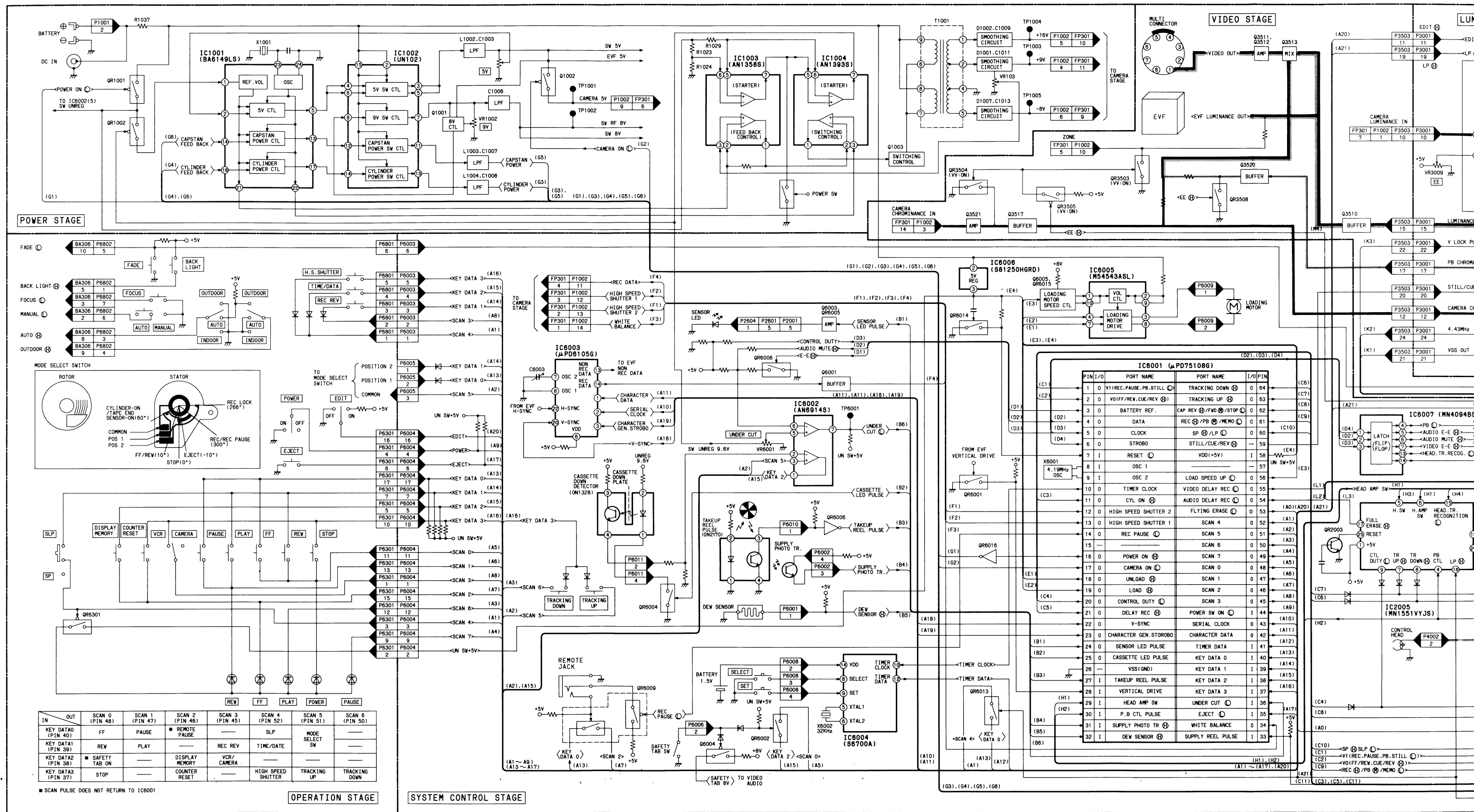
### 3-2. CAMERA PROCESS BLOCK DIAGRAM



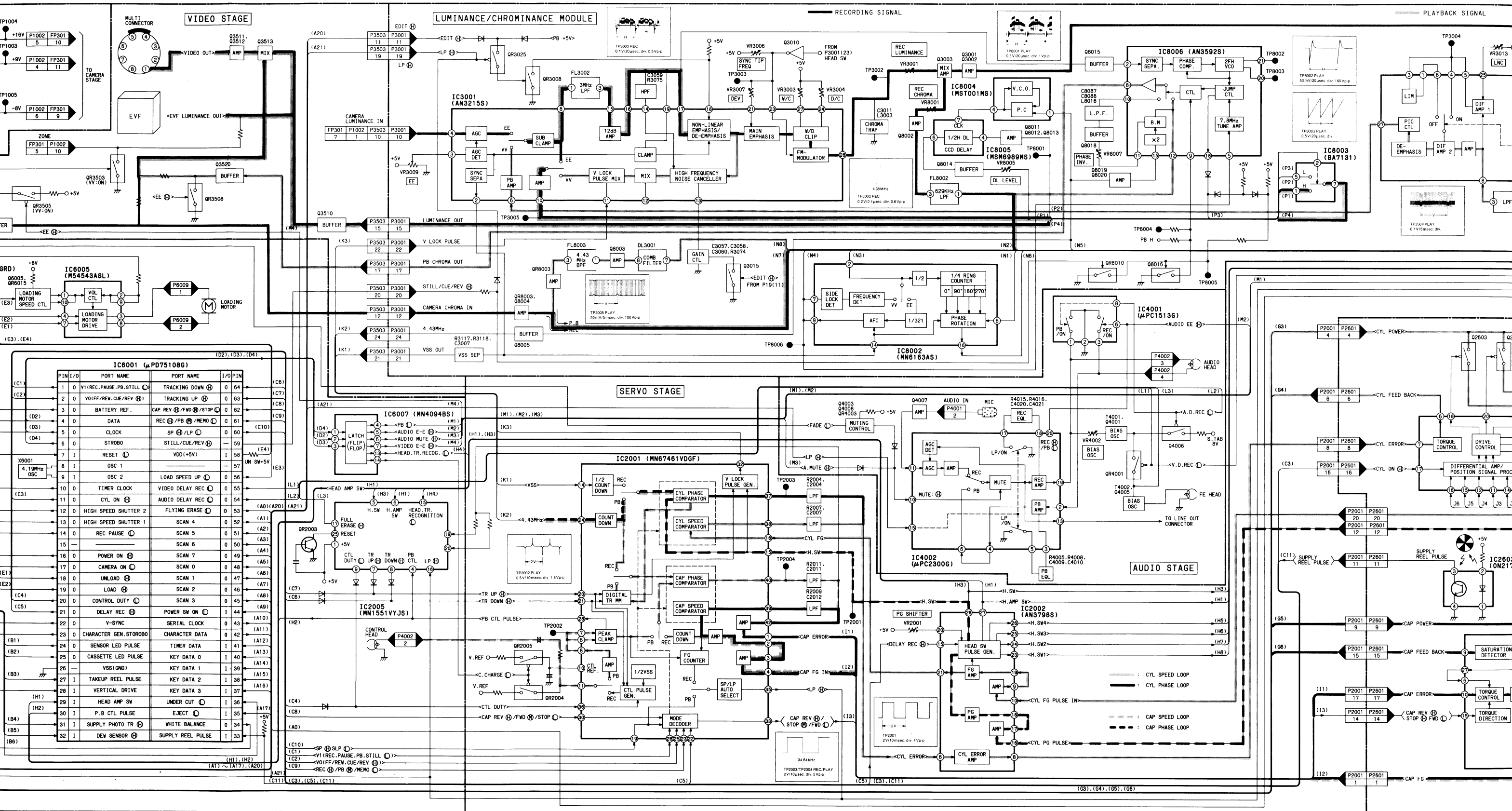


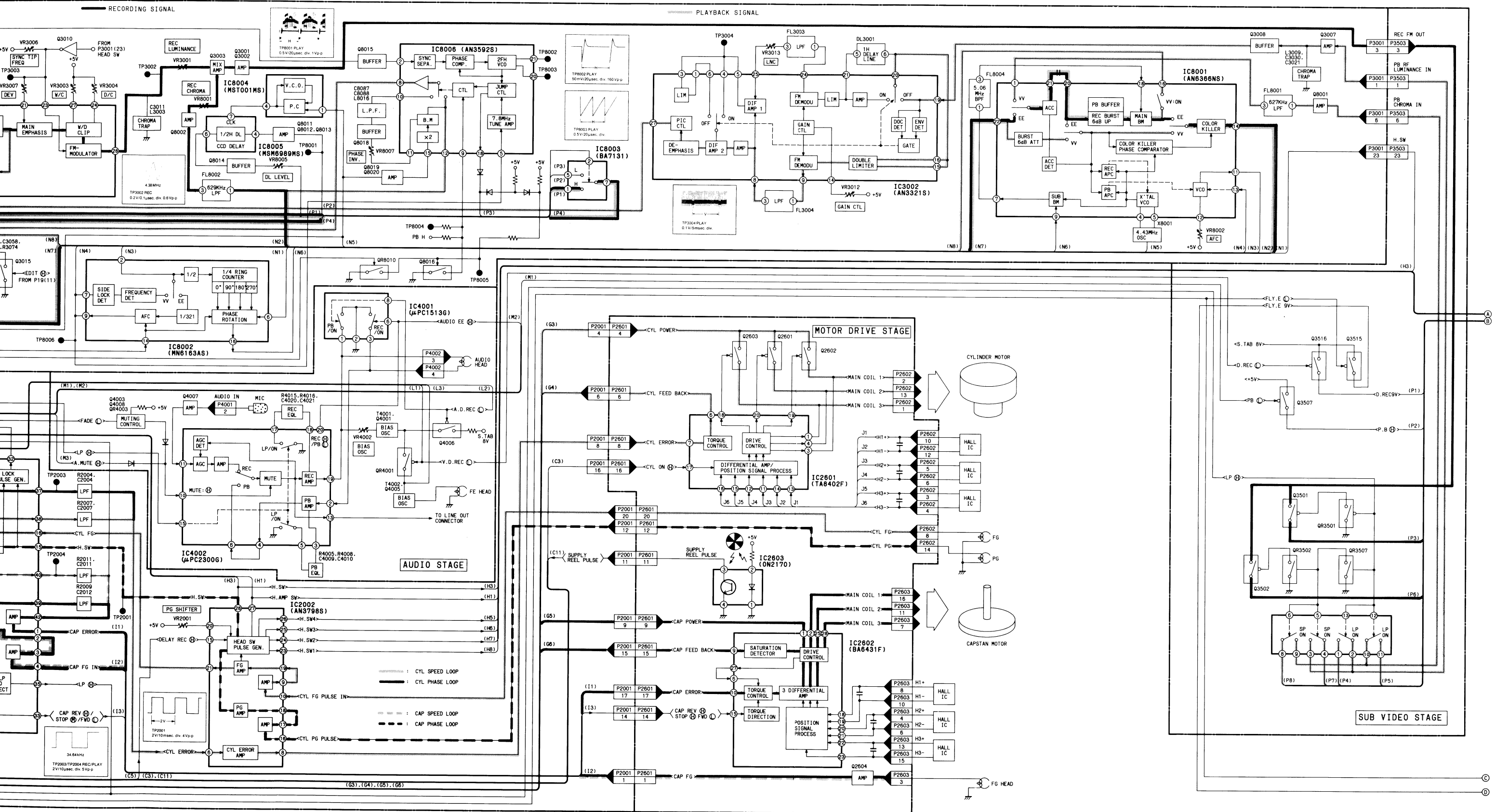


3.3. VIDEO RECORDER PROCESS BLOCK DIAGRAM

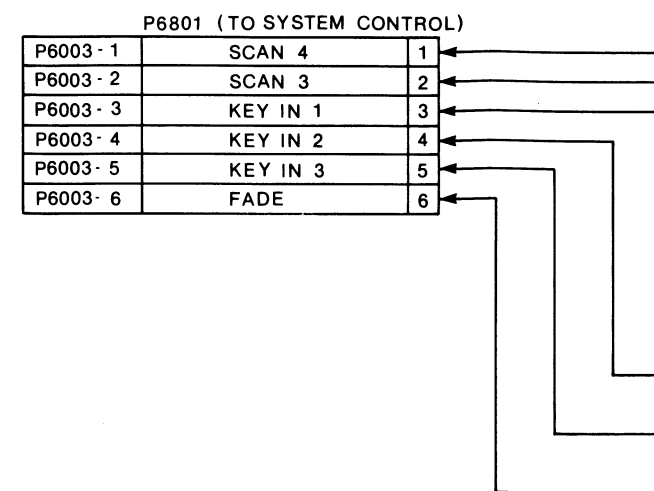






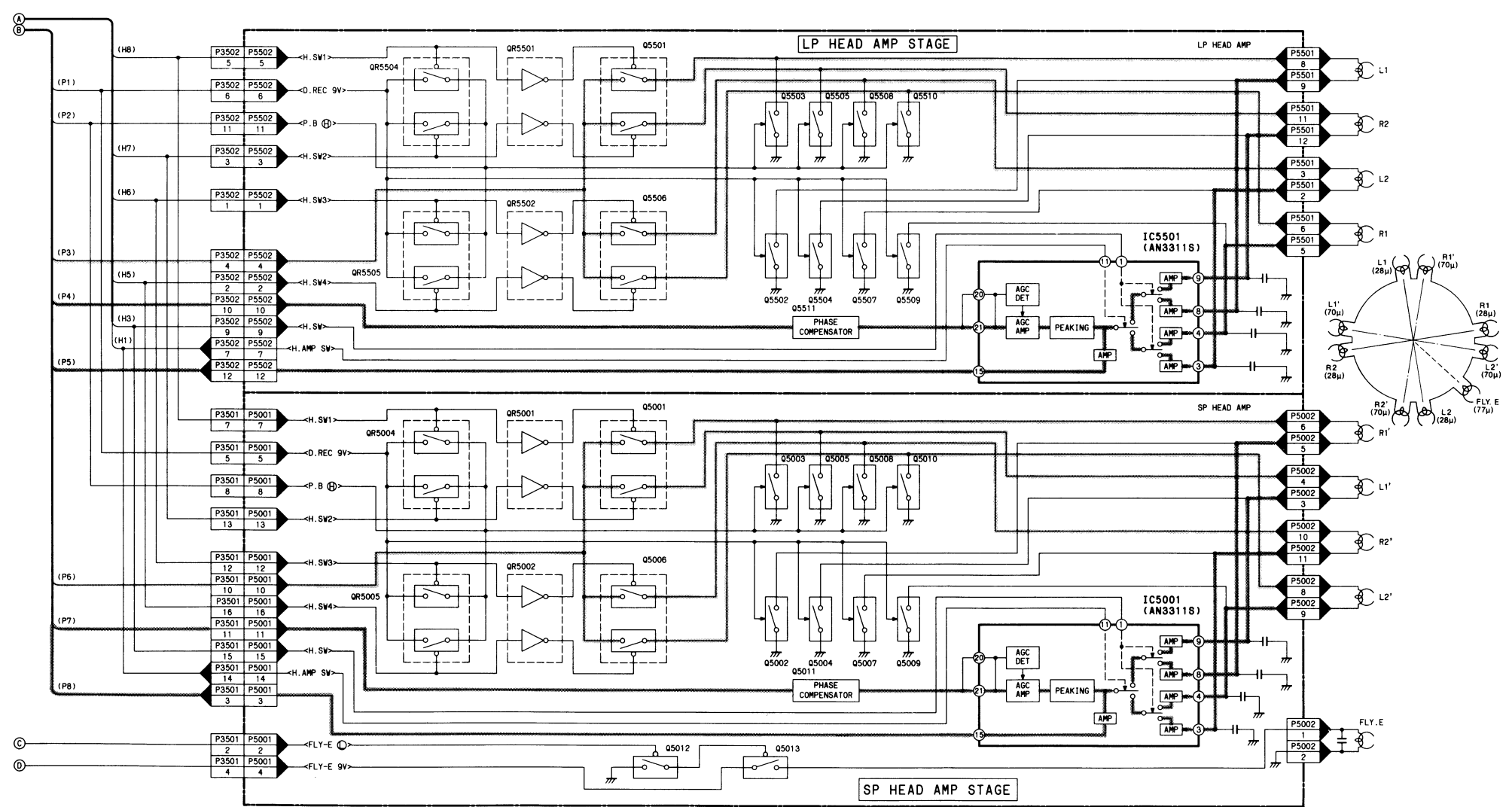


3-4. CAMERA OPERATION SCHEM



NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS D  
IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFF

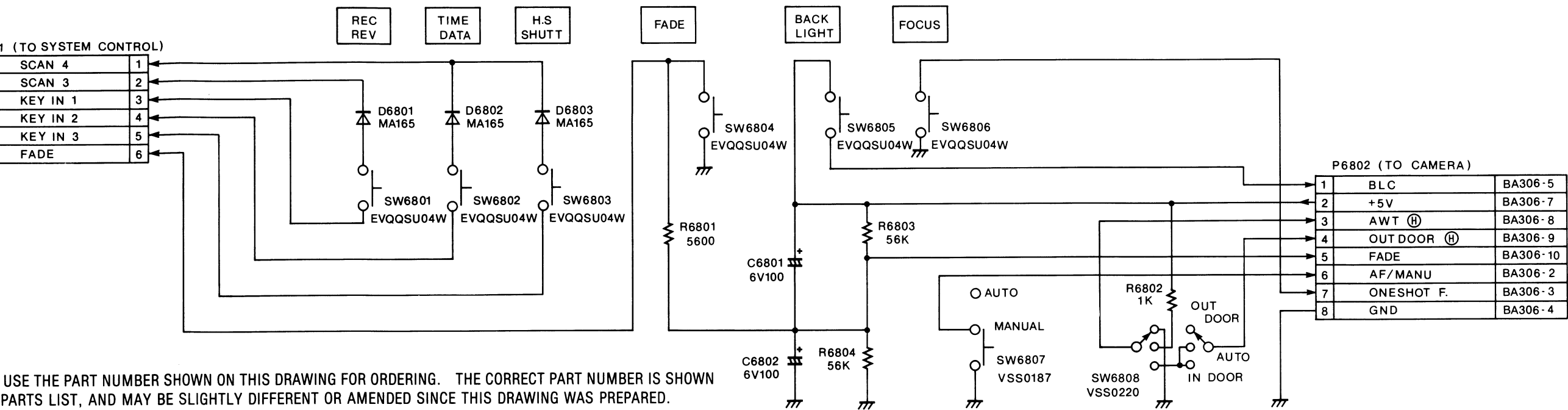
3-5. CAME



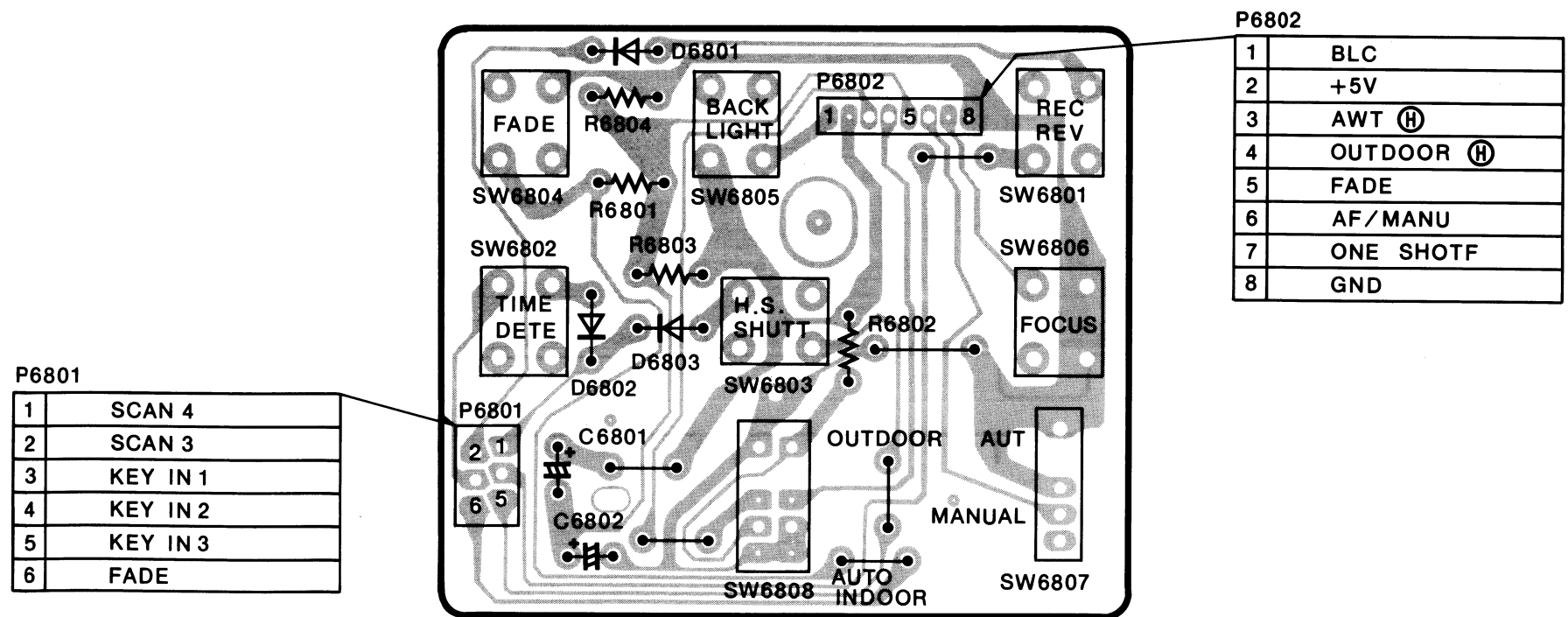
P6801

1	SCAN
2	SCAN
3	KEY I
4	KEY I
5	KEY I
6	FADE

# CAMERA OPERATION SCHEMATIC DIAGRAM



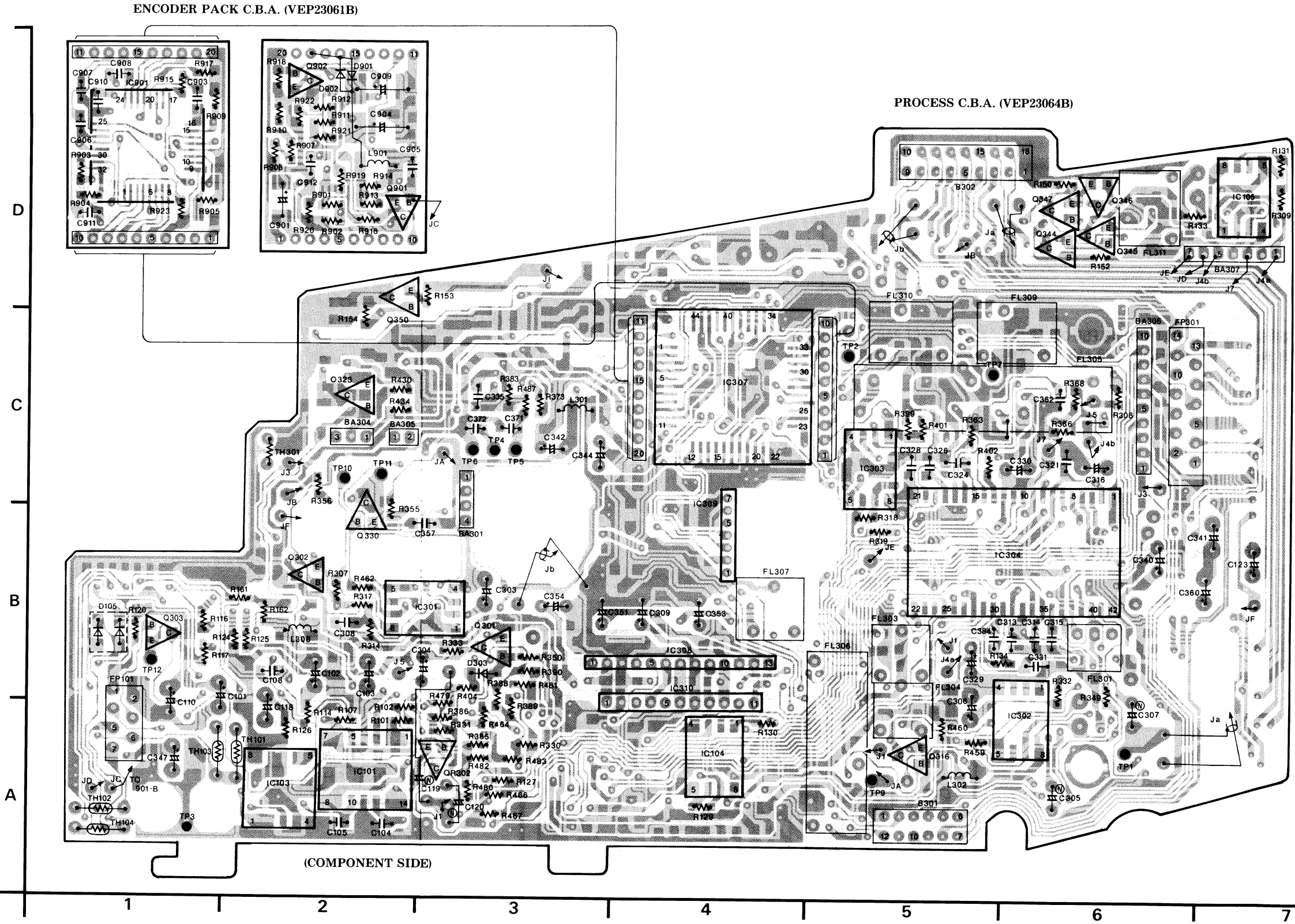
## 3-5. CAMERA OPERATION C.B.A. (VEP06445A)



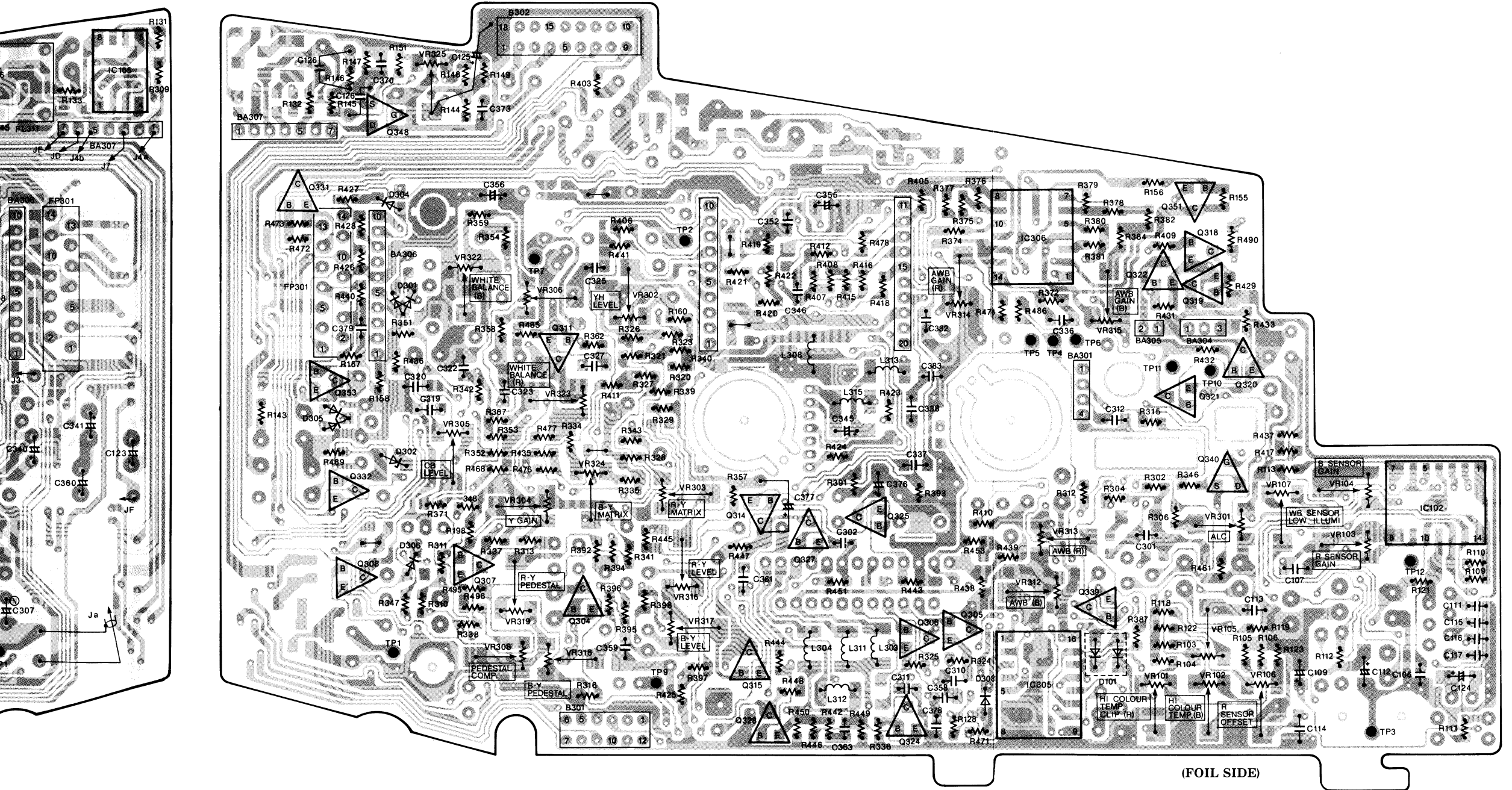
3-6. PROCESS C.B.A. (VEP23064B) & ENCODER PACK C.B.A. (VEP23061B)

PROCESS & ENCODER PACK C.B.A.			
Transistor		TP3	
Q301	B-3	TP3	A-1
Q302	B-2	TP4	A-13
Q303	B-1	TP4	C-3
Q304	A-9	TP5	C-11
Q305	A-11	TP5	C-3
Q306	A-11	TP6	C-11
Q307	B-9	TP6	C-11
Q308	B-8	TP7	C-5
Q311	C-9	TP7	C-9
Q314	B-10	TP8	B-3
Q315	A-10	TP8	B-11
Q316	A-5	TP9	A-5
Q318	C-12	TP9	A-9
Q319	C-12	TP10	C-2
Q320	C-12	TP10	C-12
Q321	C-12	TP11	C-2
Q322	C-12	TP11	C-12
Q323	C-2	TP12	B-1
Q324	A-11	TP12	B-13
Q325	B-11		
Q327	B-10		
Q328	A-10		
Q330	B-2		
Q331	D-8		
Q332	B-8		
Q339	B-12		
Q340	B-12		
Q344	D-6		
Q345	D-6		
Q346	D-6		
Q347	D-6		
Q348	D-8		
Q350	D-2		
Q351	C-12		
Q353	C-8		
Q901	D-2		
Q902	E-2		
Transistor & Resistor		Adjustment	
QR302	A-3	VR101	A-12
Integrated Circuit		VR102	A-12
IC101	A-2	VR103	B-13
IC102	B-13	VR104	B-13
IC103	A-2	VR105	A-12
IC104	A-4	VR106	A-12
IC105	D-7	VR107	B-12
IC301	B-3	VR301	B-12
IC302	A-6	VR302	C-9
IC303	C-5	VR303	B-10
IC304	B-6	VR304	B-9
IC305	A-11	VR305	B-8
IC306	C-11	VR306	C-9
IC307	C-4	VR308	A-9
IC308	B-4	VR312	B-11
IC309	C-4	VR314	C-11
IC310	B-4	VR315	C-12
IC901	E-1	VR316	B-9
Test Point		VR317	A-10
TP1	A-6	VR318	A-10
TP1	A-8	VR319	A-9
TP2	C-5	VR322	C-8
TP2	C-10	VR323	C-9
		VR324	B-9
		VR325	D-8
Connector		Connector	
B301	A-5	B301	A-5
B301	A-9	B301	A-9
B302	D-5	B302	D-5
B302	D-9	B302	D-9
BA301	B-3	BA301	B-3
BA301	C-11	BA301	C-11
BA304	C-2	BA304	C-2
BA304	C-12	BA304	C-12
BA305	C-2	BA305	C-2
BA305	C-12	BA305	C-12
BA306	D-6	BA306	D-6
BA306	C-8	BA306	C-8
BA307	D-7	BA307	D-7
BA307	D-7	BA307	D-7

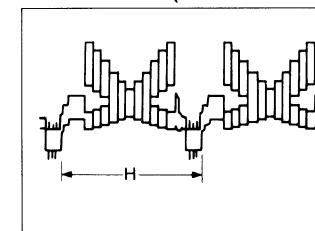
ADDRESS INFORMATION  
⊙ ... COMPONENT SIDE  
⊙ ... FOIL SIDE



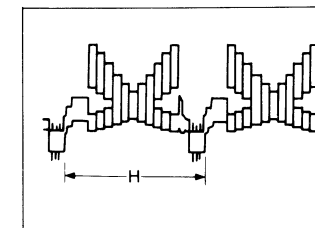




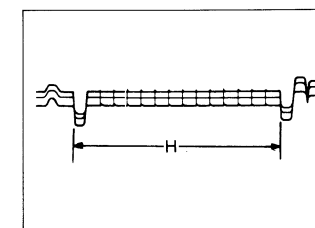
PROCESS MAIN CIRCUIT TP (Test Point)  
WAVE FORM (REF No. 300 Series)



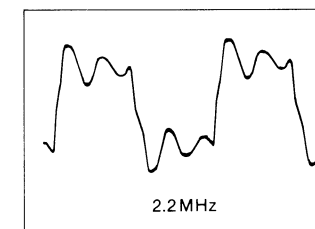
TP301 STOP  
0.1V/20μsec. div. 0.35Vp-p



TP302 STOP  
0.1V/20μsec. div. 0.3Vp-p

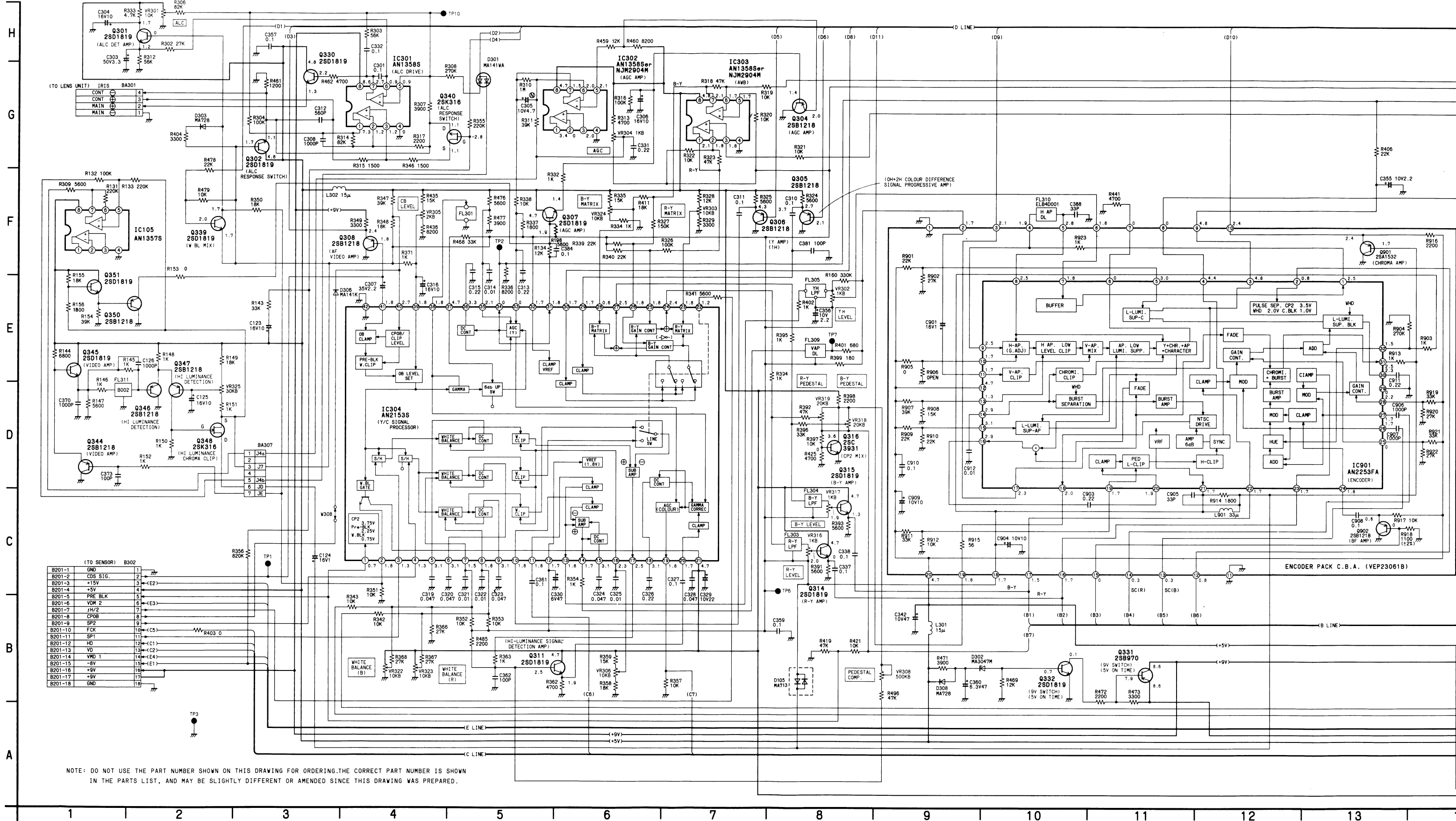


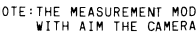
TP307 STOP  
50mV/20μsec. div. 50mVp-p



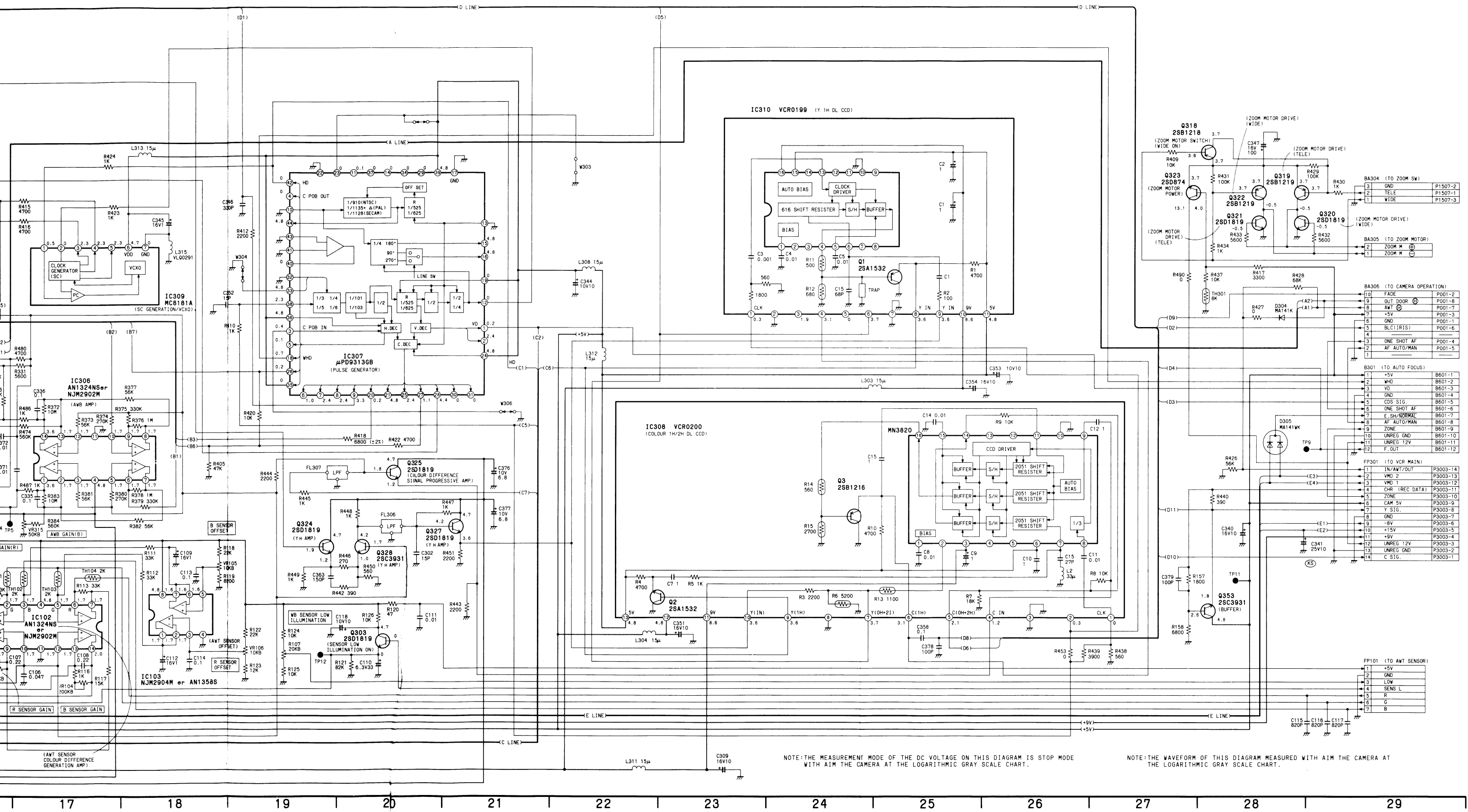
TP308 STOP  
0.2V/50μsec. div. 8Vp-p

3-7. PROCESS & ENCODER PACK SCHEMATIC DIAGRAM





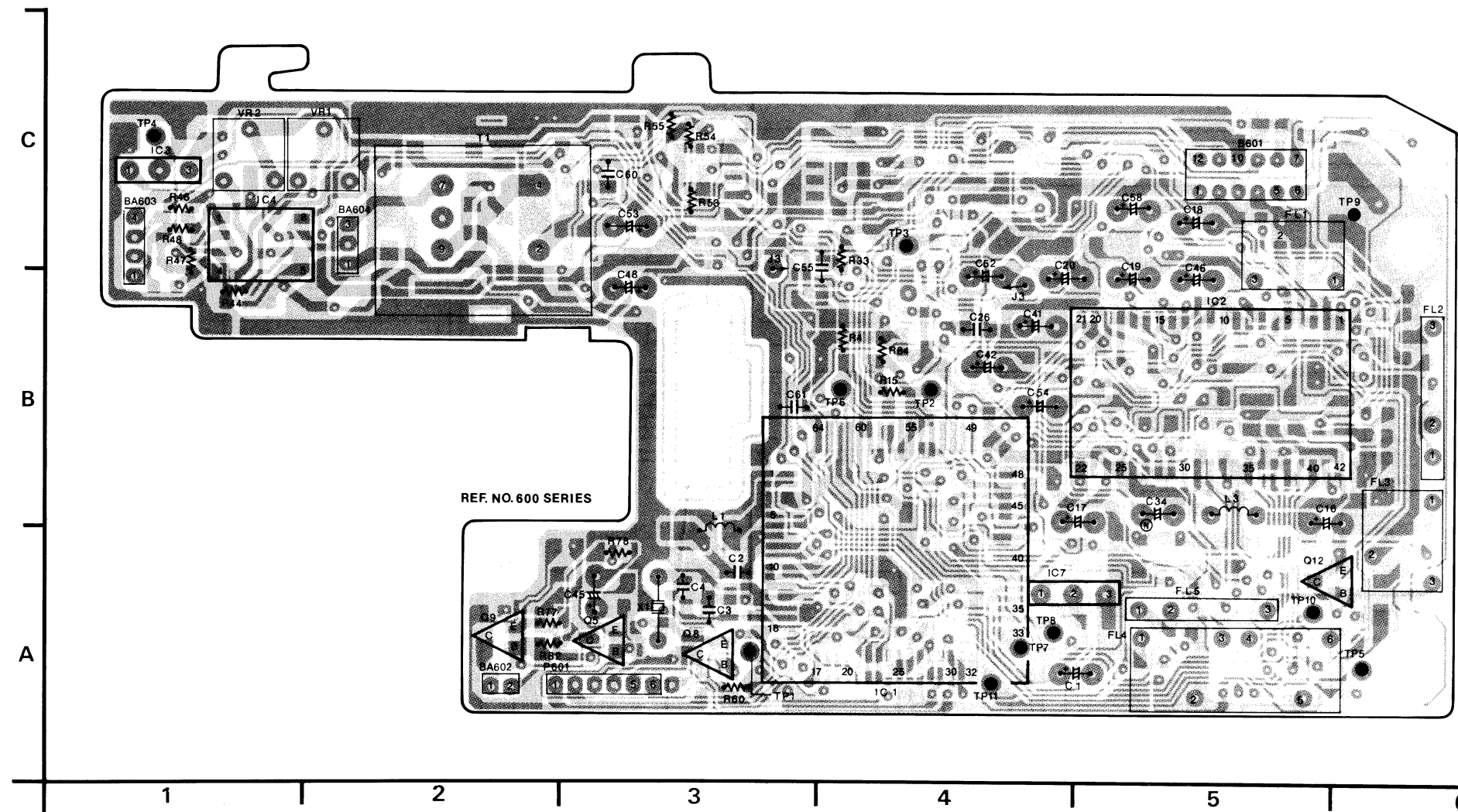
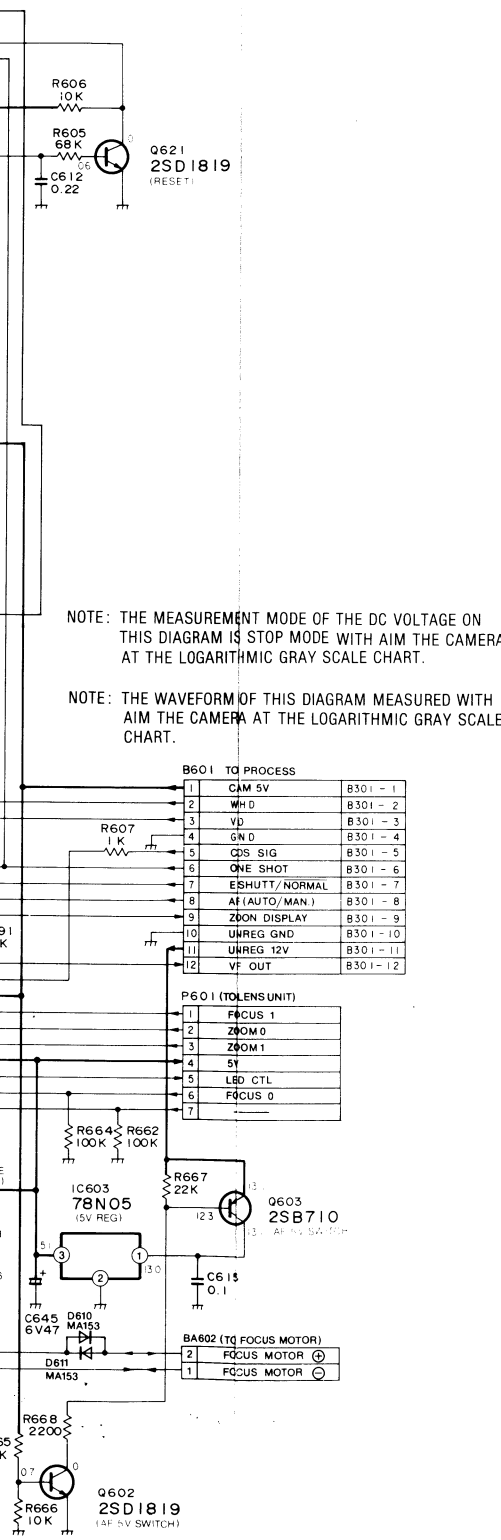




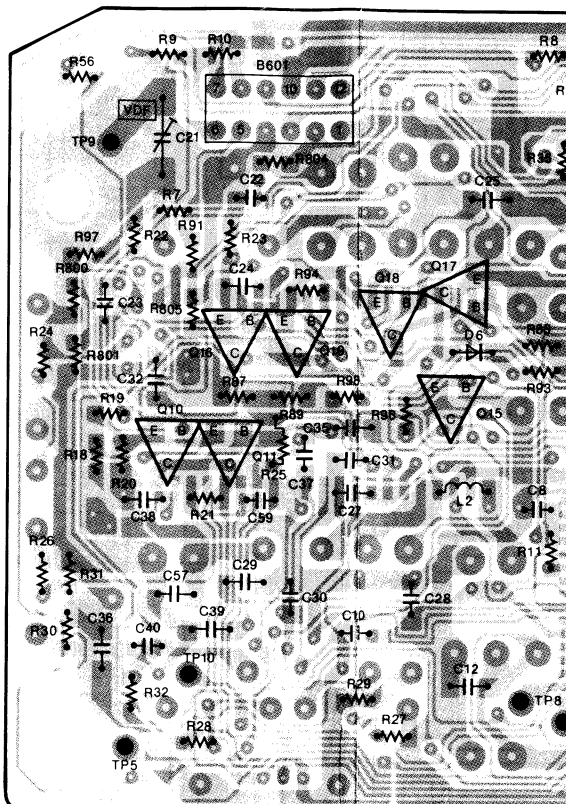
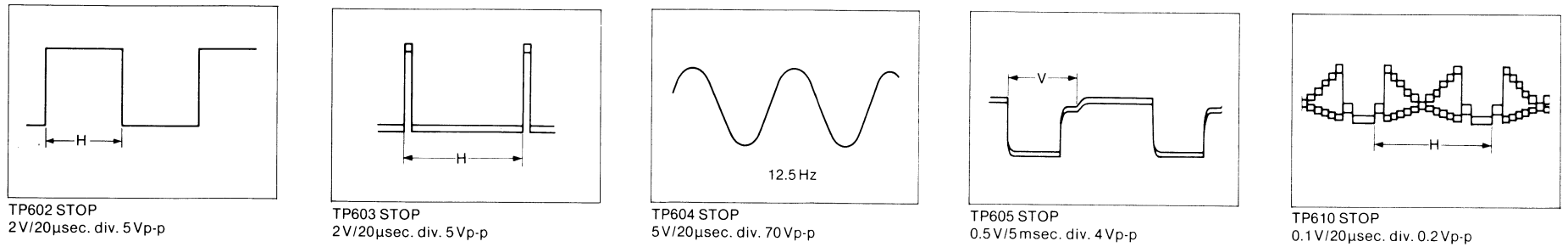


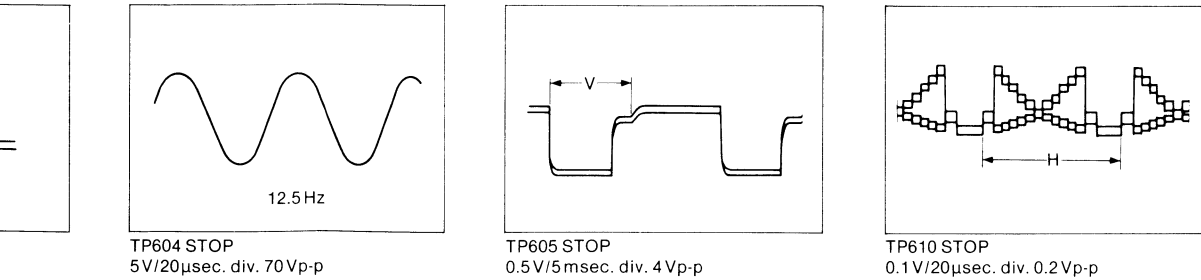
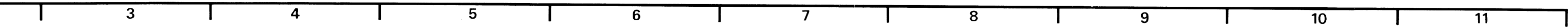
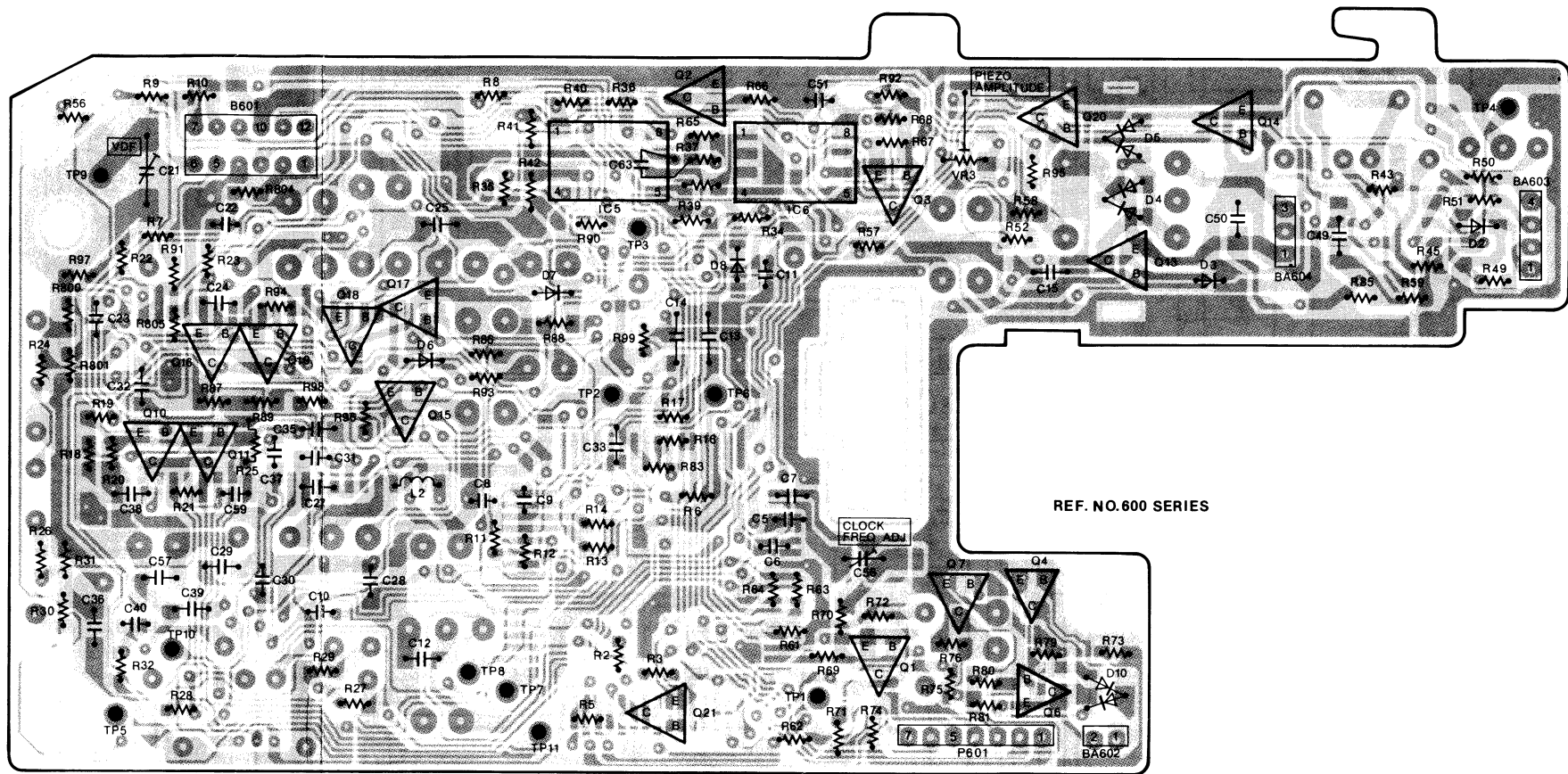
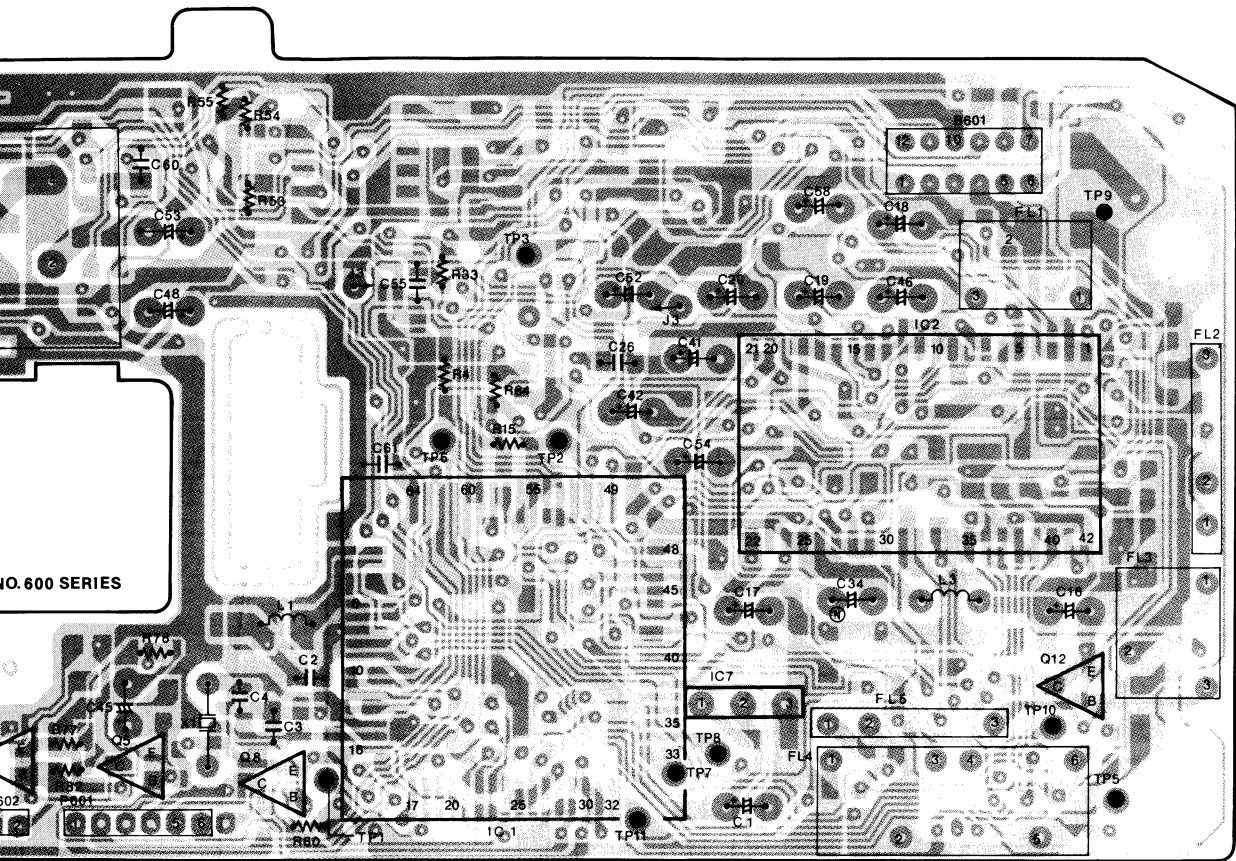
(TO LENS UNIT)		BA603
HOLE EL OUT	⊖	4
HOLE EL IN	⊕	3
HOLE EL OUT	⊕	2
HOLE EL IN	⊕	1

3-9. AUTO FOCUS C.B.A. (VEP28015B)



AUTO FOCUS CIRCUIT TP (Test Point) WAVE FORM(REF No. 600 Series)





AUTO FOCUS C.B.A.									
Transistor		Integrated Circuit		TP608		A-4			
Q601	A-9	IC601	A-4	TP608	A-8				
Q602	C-9	IC602	B-5	TP609	C-6				
Q603	C-9	IC603	C-1	TP610	A-5				
Q604	A-10	IC604	C-1	TP610	A-7				
Q605	A-3	IC605	C-8	TP611	A-4				
Q606	A-10	IC606	C-9	TP611	A-8				
Q607	B-9	IC607	A-4						
Q608	A-3			Adjustment					
Q609	A-2			VR601	C-2				
Q610	B-7			VR602	C-1				
Q611	B-7			VR603	C-9				
Q612	A-5			C621	C-7				
Q613	C-10			C656	B-9				
Q614	C-10			Connector					
Q615	B-8			P601	A-10				
Q616	B-7			P601	A-2				
Q617	B-8			B601	C-5				
Q618	B-7			B601	C-7				
Q619	B-8			BA602	A-2				
Q620	C-10			BA603	C-11				
Q621	A-9			BA603	C-1				
				BA604	C-2				
				BA604	B-11				

ADDRESS INFORMATION  
© --- COMPONENT SIDE  
Ⓣ --- FOIL SIDE



F

E

D

C

B

A

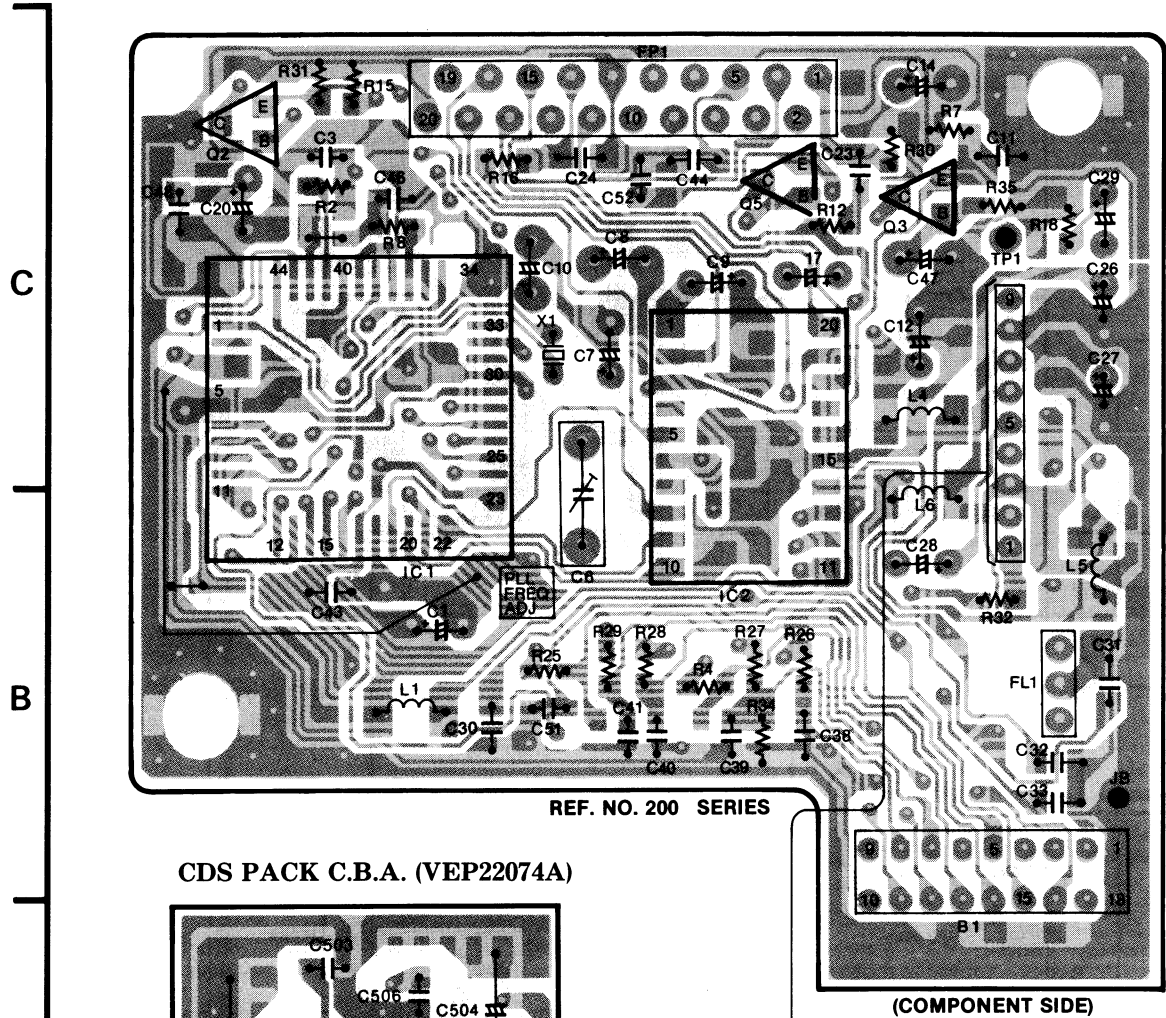
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: THE WAVEFORM OF THIS DIAGRAM MEASURED WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

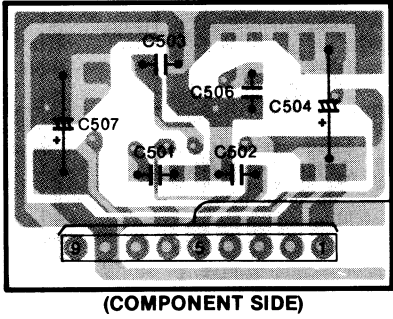
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

3-11. SENSOR C.B.A. (VEP22073A) & C.D.S. PACK C.B.A. (VEP22074A)

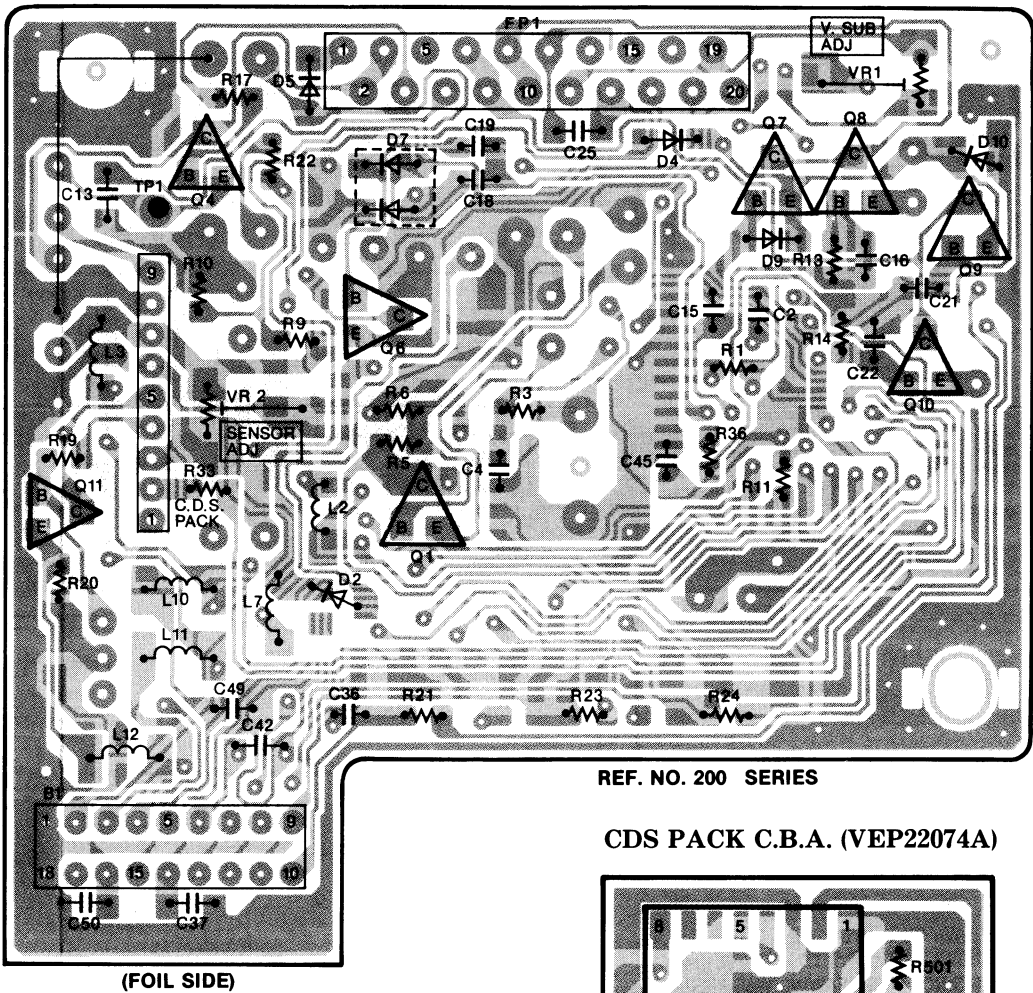
SENSOR C.B.A. (VEP22073A)



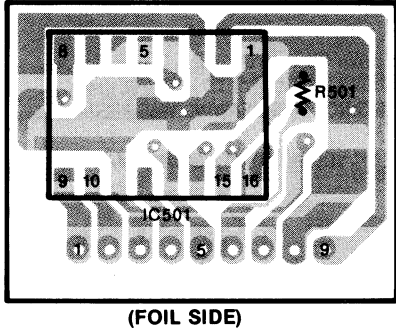
CDS PACK C.B.A. (VEP22074A)



SENSOR C.B.A. (VEP22073A)



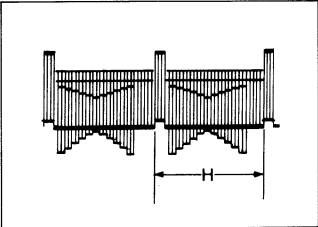
CDS PACK C.B.A. (VEP22074A)



SENSOR & C.D.S. PACK C.B.A.		
Transistor		
Q201	B-5	Ⓢ
Q202	C-1	Ⓢ
Q203	C-3	Ⓢ
Q204	C-4	Ⓢ
Q205	C-2	Ⓢ
Q206	C-5	Ⓢ
Q207	C-5	Ⓢ
Q208	C-6	Ⓢ
Q209	C-6	Ⓢ
Q210	C-6	Ⓢ
Q211	B-4	Ⓢ
Integrated Circuit		
IC201	B-1	Ⓢ
IC202	B-2	Ⓢ
IC203	B-3	Ⓢ
IC501	A-5	Ⓢ
Test Point		
TP201	C-3	Ⓢ
TP201	C-4	Ⓢ
Adjustment		
VR201	C-6	Ⓢ
VR202	C-4	Ⓢ
Connector		
FP201	D-2	Ⓢ
B201	A-3	Ⓢ

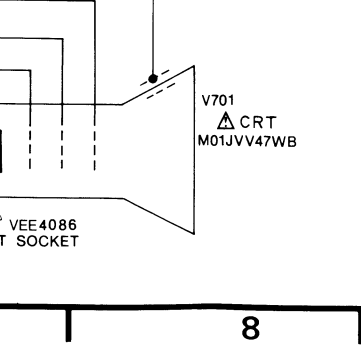
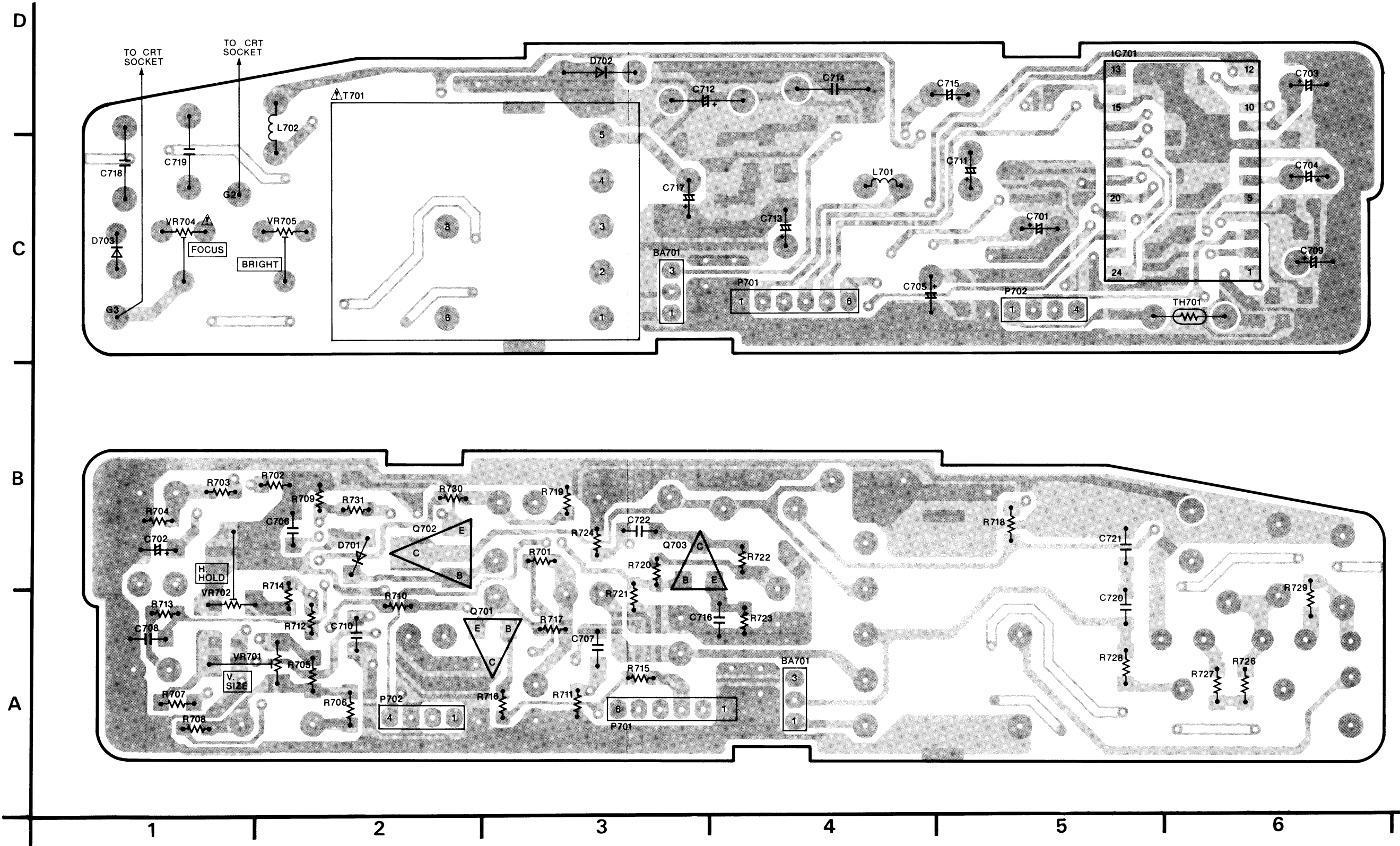
ADDRESS INFORMATION  
Ⓢ ... COMPONENT SIDE  
Ⓢ ... FOIL SIDE

SENSOR CIRCUIT TP (Test Point)  
WAVE FORM(REF No. 200 Series)



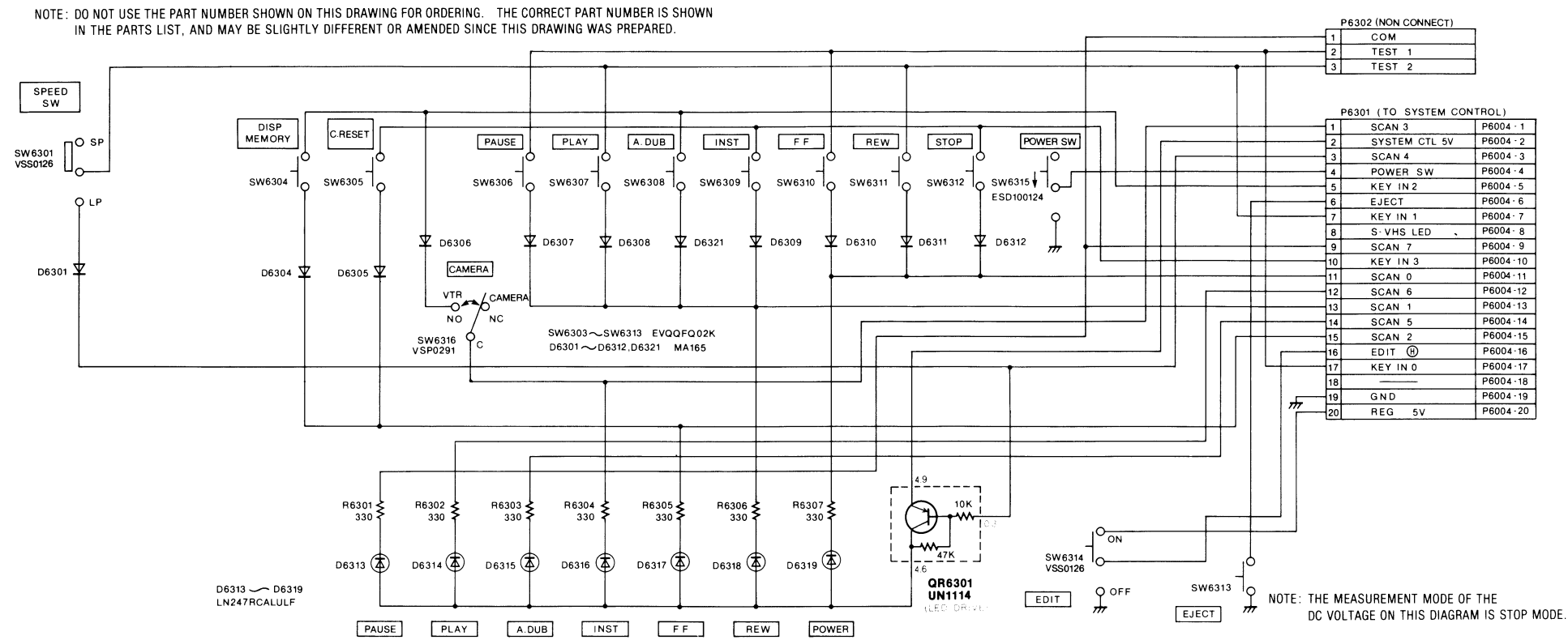
TP201 STOP  
20mV/20μsec. div. 0.6Vp-p



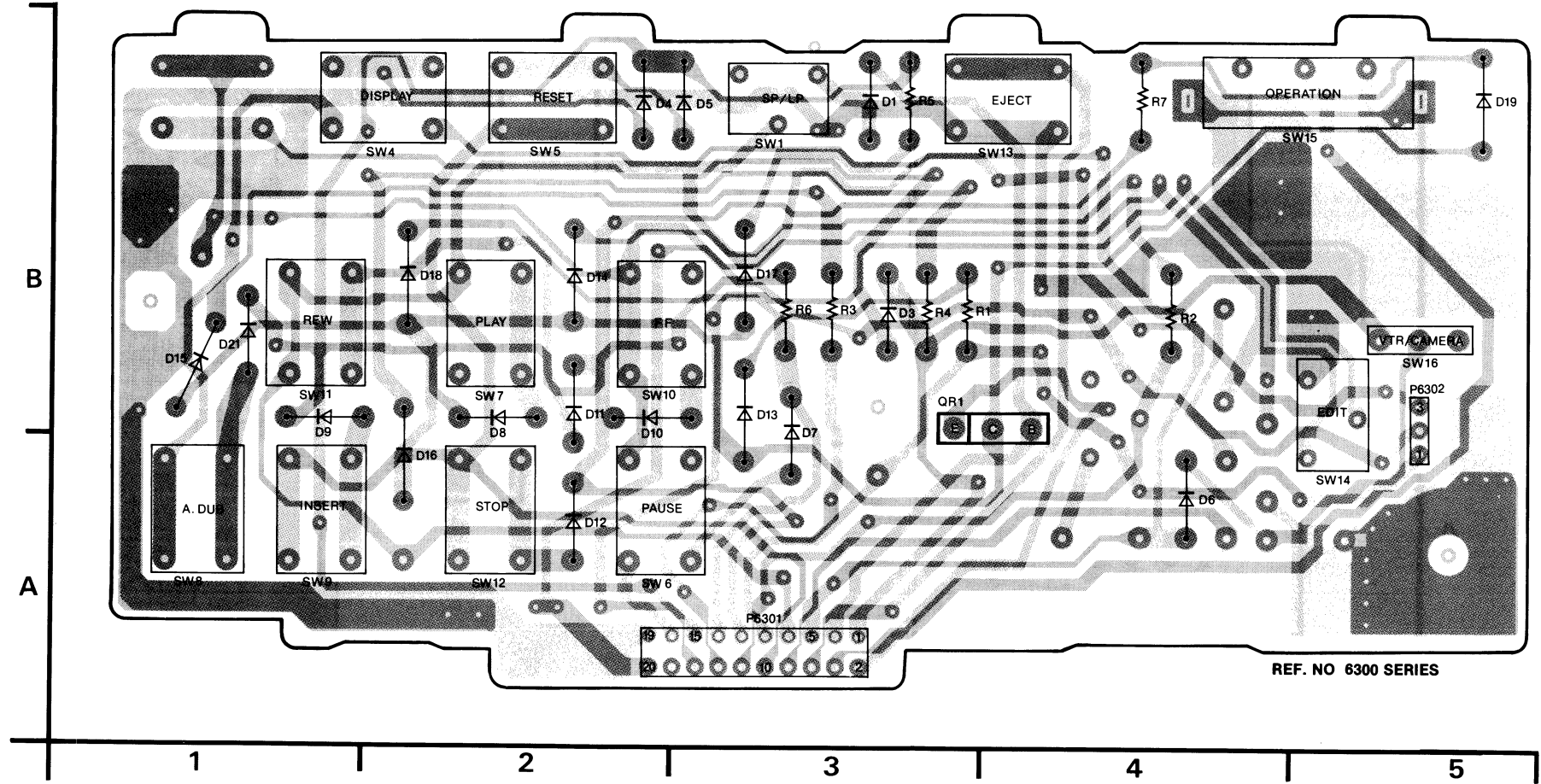




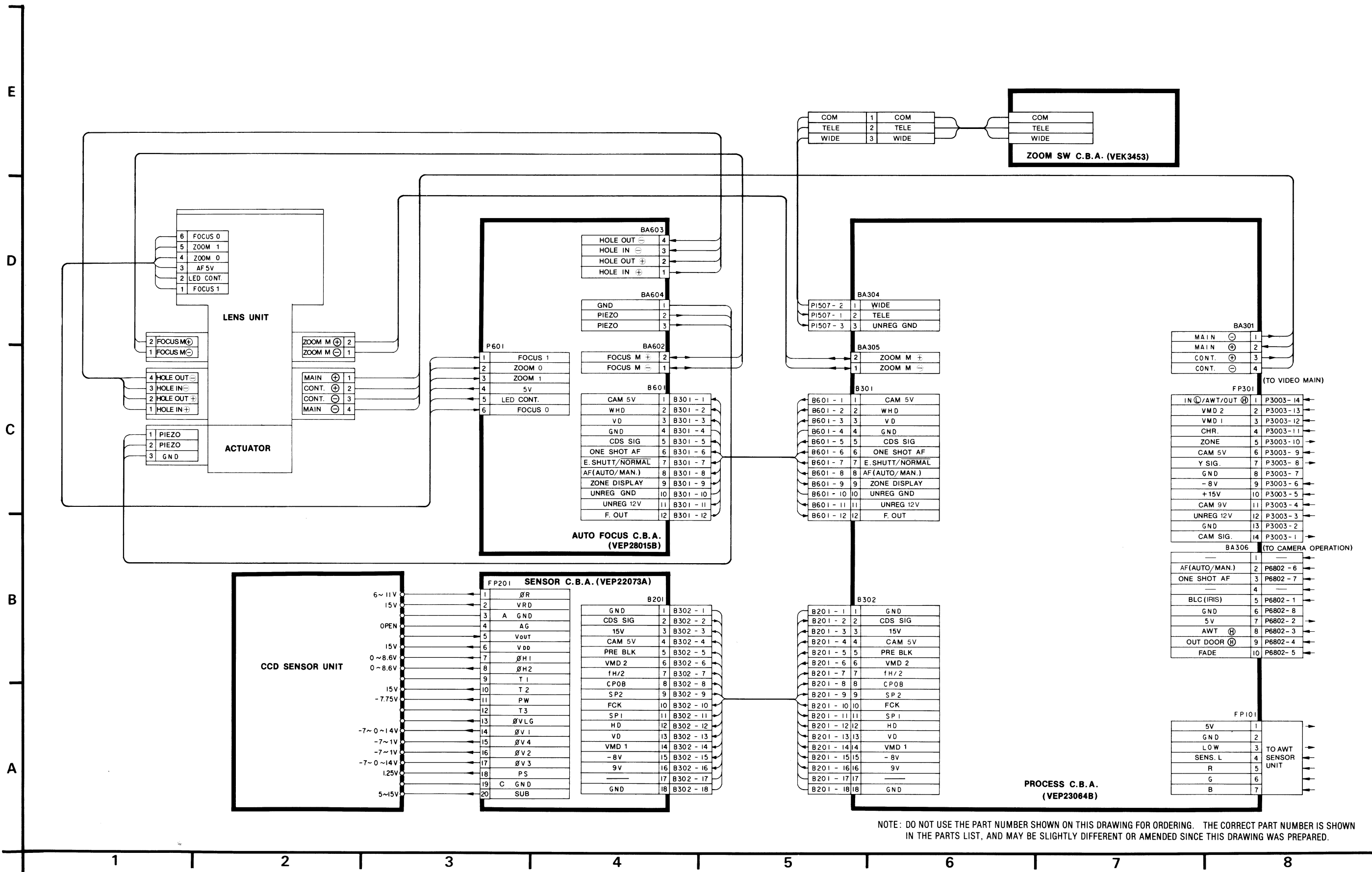
3-14. VTR OPERATION SCHEMATIC DIAGRAM



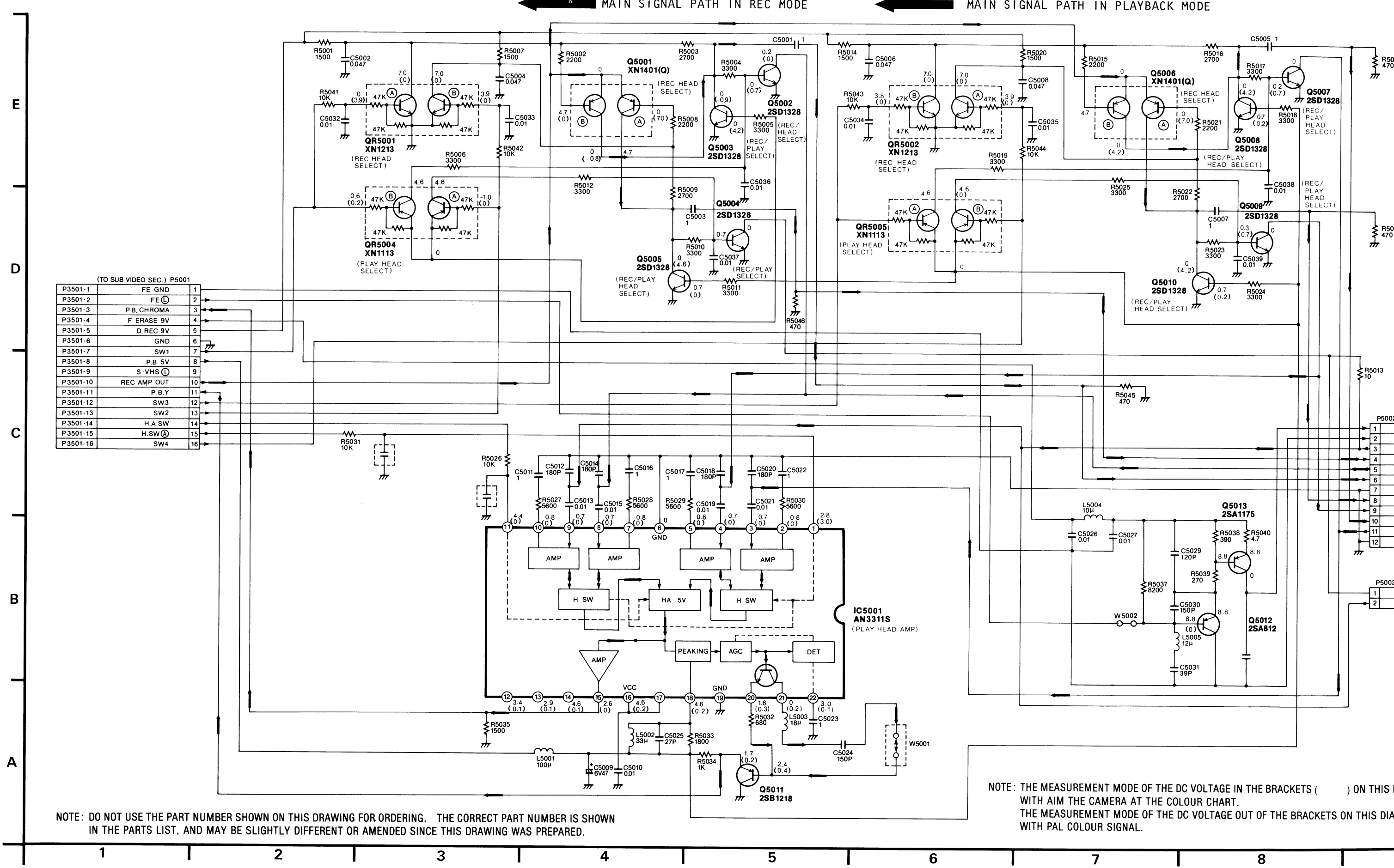
3-15. VTR OPERATION C.B.A. (VEP06444B)



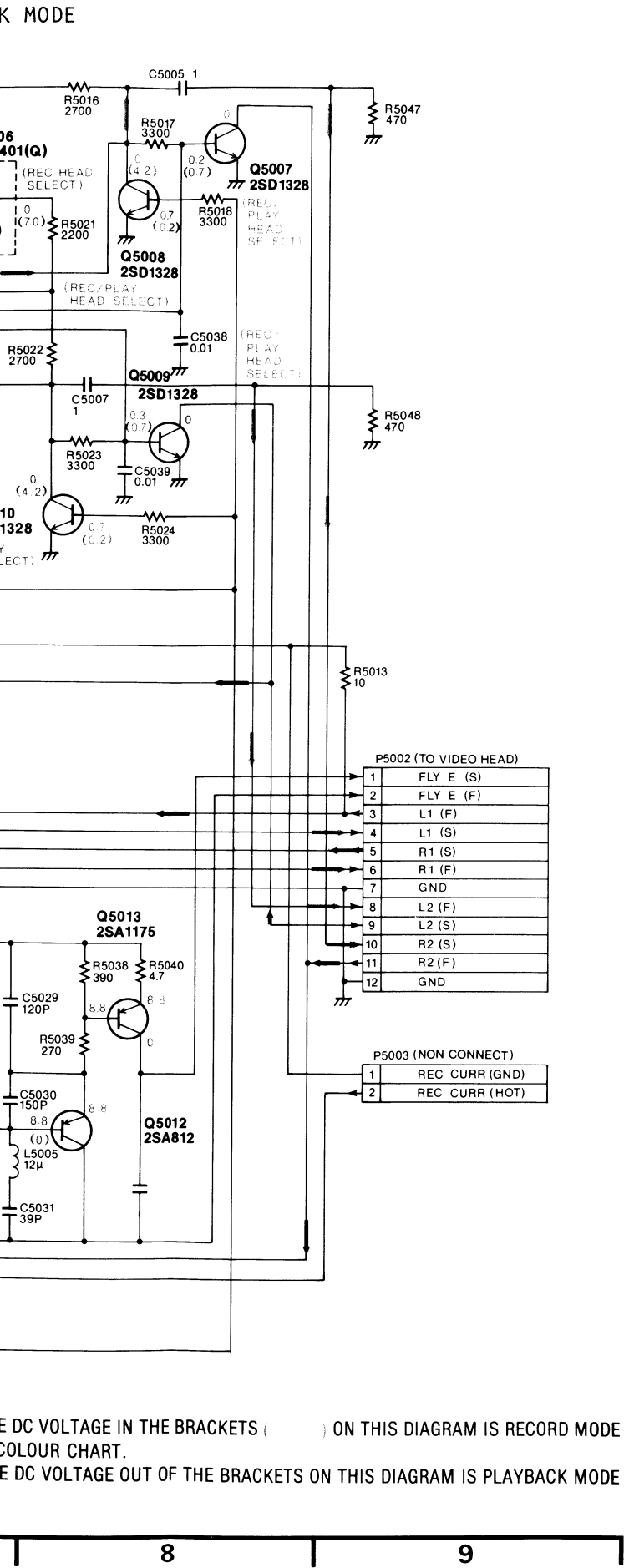
3-16. CAMERA INTERCONNECTION SCHEMATIC DIAGRAM



3-17. SP HEAD AMP SCHEMATIC DIAGRAM

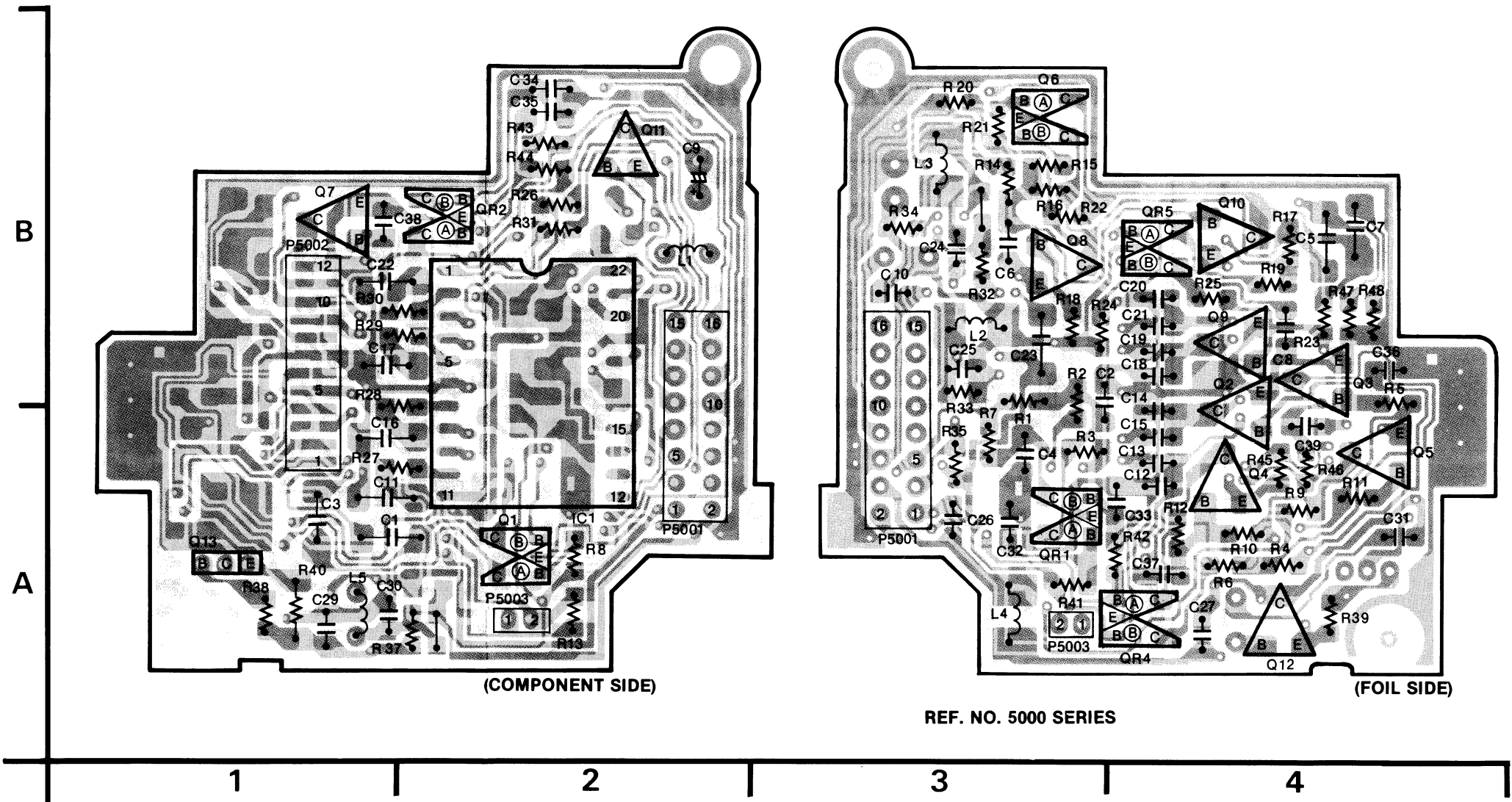


3-18. SP HEAD AMP C.B.A. (VEP05112B)



SP HEAD AMP C.B.A.		
Transistor		
Q5001	A-2	Ⓢ
Q5002	B-4	Ⓢ
Q5003	B-4	Ⓢ
Q5004	A-4	Ⓢ
Q5005	A-5	Ⓢ
Q5006	B-3	Ⓢ
Q5007	B-1	Ⓢ
Q5008	B-3	Ⓢ
Q5009	B-4	Ⓢ
Q5010	B-4	Ⓢ
Q5011	B-2	Ⓢ
Q5012	A-4	Ⓢ
Q5013	A-1	Ⓢ
Transistor & Resistor		
QR5001	A-3	Ⓢ
QR5002	B-2	Ⓢ
QR5004	A-4	Ⓢ
QR5005	B-4	Ⓢ
Integrated Circuit		
IC5001	A-2	Ⓢ
Connector		
P5001	A-2	Ⓢ
P5001	A-3	Ⓢ
P5002	B-1	Ⓢ
P5003	A-2	Ⓢ

ADDRESS INFORMATION  
Ⓢ ... COMPONENT SIDE  
Ⓢ ... FOIL SIDE

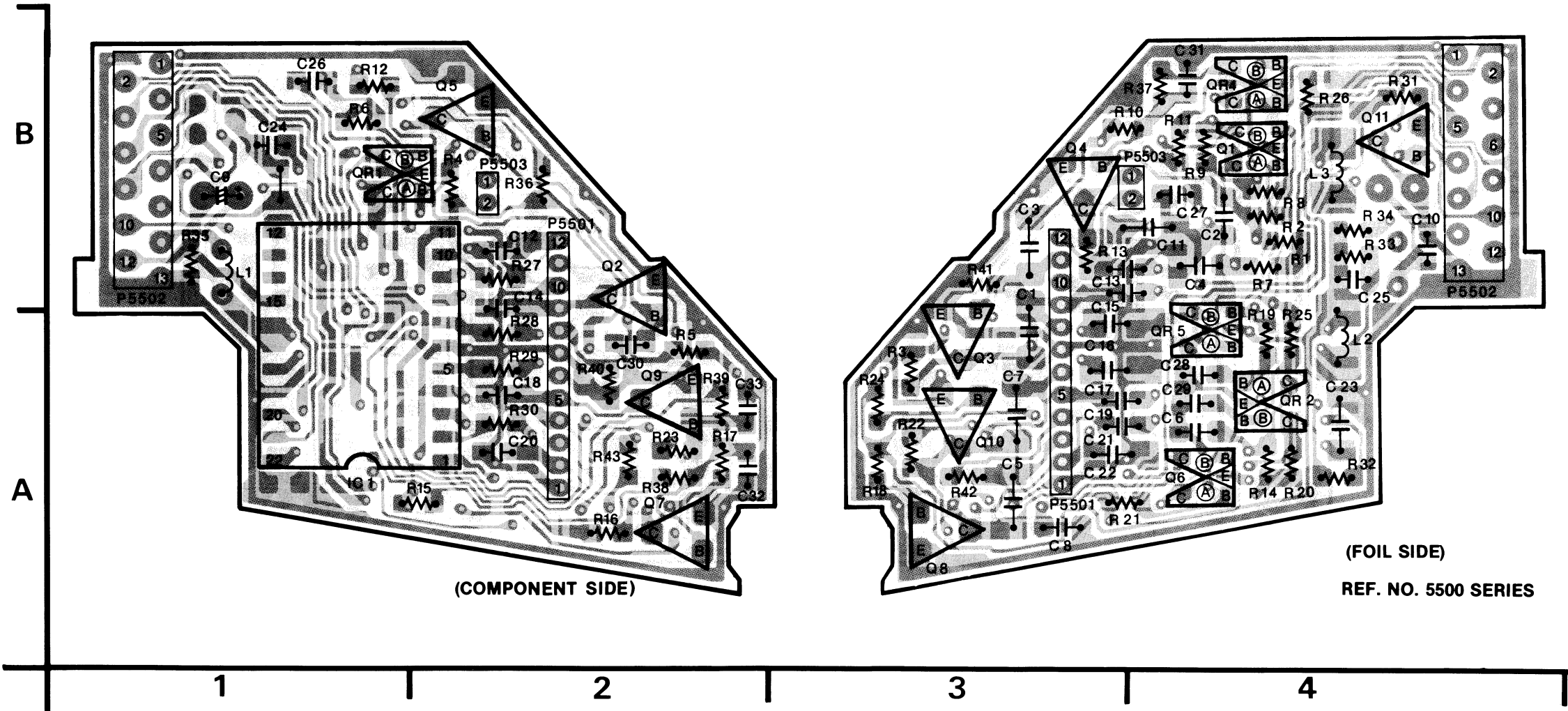


NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE COLOUR CHART.  
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.

3-20. LP HEAD AMP C.B.A. (VEP05115B)

LP HEAD AMP C.B.A.		
Transistor		
Q5501	B-4	Ⓢ
Q5502	B-2	Ⓢ
Q5503	A-3	Ⓢ
Q5504	B-3	Ⓢ
Q5505	B-2	Ⓢ
Q5506	A-4	Ⓢ
Q5507	A-2	Ⓢ
Q5508	A-3	Ⓢ
Q5509	A-2	Ⓢ
Q5510	A-3	Ⓢ
Q5511	B-4	Ⓢ
Transistor & Resistor		
QR5501	B-1	Ⓢ
QR5502	A-4	Ⓢ
QR5504	B-4	Ⓢ
QR5505	A-4	Ⓢ
Integrated Circuit		
IC5501	A-1	Ⓢ
Connector		
P5501	B-2	Ⓢ
P5502	B-1	Ⓢ
P5503	B-2	Ⓢ

ADDRESS INFORMATION  
Ⓢ ... COMPONENT SIDE  
Ⓢ ... FOIL SIDE

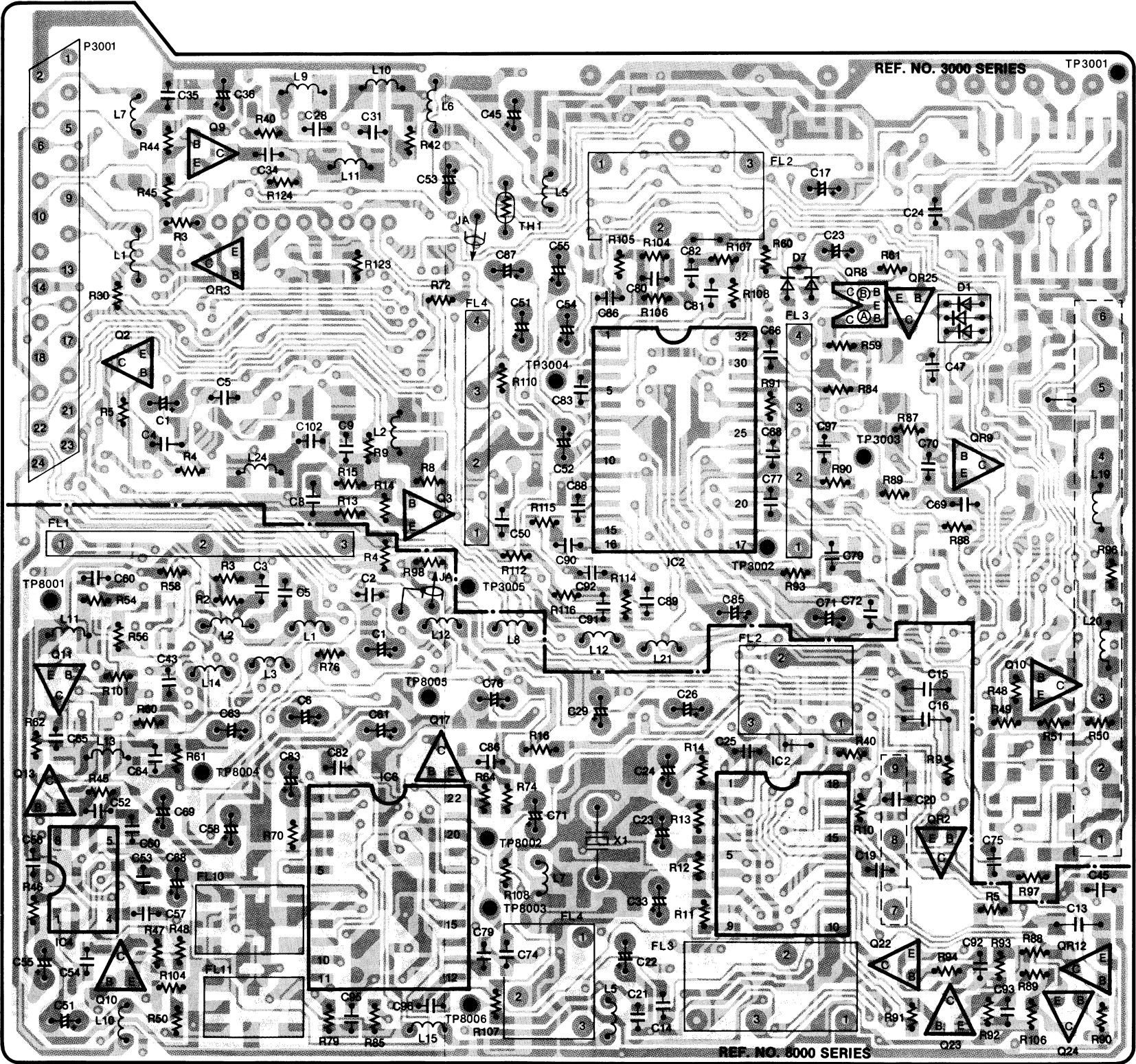




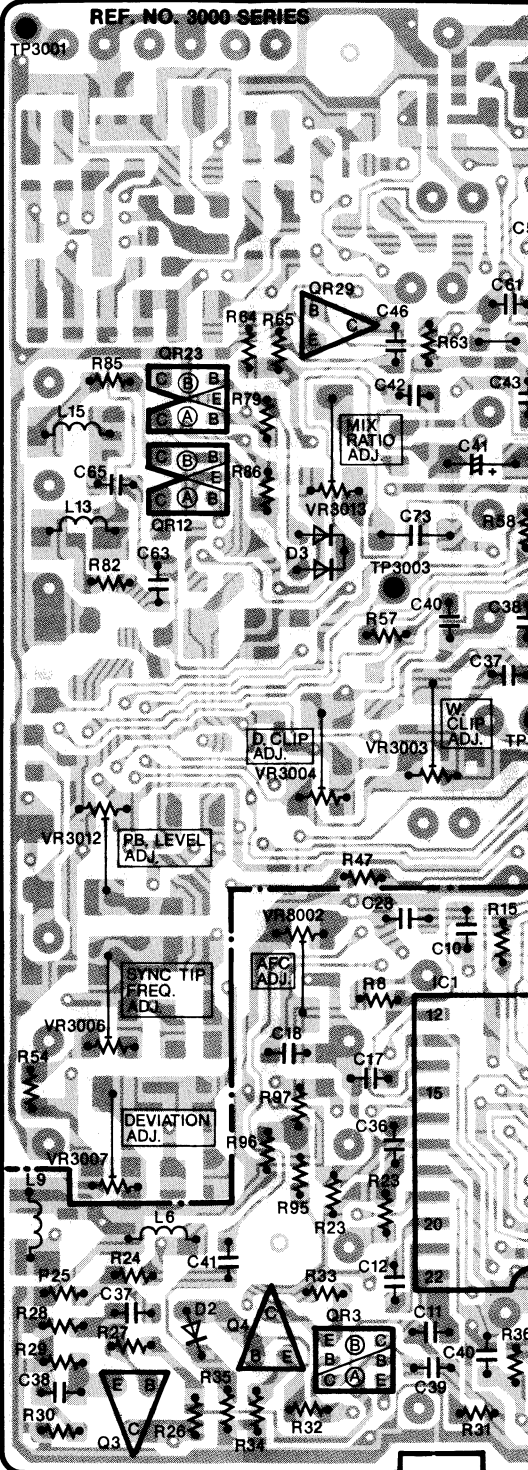
3-21. LUMINANCE/CHROMINANCE C.B.A. (VEP03471B)

LUMINANCE & CHROMINANCE C.B.A.			
Transistor		IC3003	
Q3001	C-8	Q3001	D-4
Q3002	C-1	Q3002	B-6
Q3003	C-2	Q3003	B-4
Q3007	D-8	Q3007	B-9
Q3008	D-8	Q3008	A-1
Q3009	D-1	Q3009	A-9
Q3010	B-4	Q3010	B-2
Q3012	D-6	Q3012	
Q8001	C-8	Q8001	
Q8002	B-7	Q8002	
Q8003	A-5	Q8003	
Q8004	A-6	Q8004	
Q8005	A-7	Q8005	
Q8010	A-1	Q8010	
Q8011	B-1	Q8011	
Q8012	B-1	Q8012	
Q8013	B-1	Q8013	
Q8014	A-9	Q8014	
Q8015	B-7	Q8015	
Q8016	B-8	Q8016	
Q8017	B-2	Q8017	
Q8018	A-8	Q8018	
Q8019	A-8	Q8019	
Q8020	A-4	Q8020	
Q8022	A-4	Q8022	
Q8023	A-4	Q8023	
Q8024	A-5	Q8024	
Transistor & Resistor		Test Point	
QR3001	C-8	TP3001	D-5
QR3002	D-4	TP3001	D-6
QR3003	C-8	TP3002	C-2
QR3005	C-8	TP3002	C-7
QR3006	C-8	TP3003	C-4
QR3007	C-7	TP3003	C-7
QR3008	D-4	TP3004	C-3
QR3009	D-4	TP3004	C-8
QR3012	C-5	TP3005	B-3
QR3015	D-7	TP3005	C-7
QR3022	D-6	TP8001	B-1
QR3023	C-5	TP8001	B-9
QR3025	D-4	TP8002	B-3
QR3027	C-8	TP8002	B-8
QR3028	D-8	TP8003	A-3
QR3029	D-6	TP8003	A-8
QR8001	C-8	TP8004	B-2
QR8002	B-4	TP8004	B-9
QR8003	A-6	TP8005	B-2
QR8004	A-7	TP8005	B-9
QR8010	B-8	TP8006	A-2
QR8011	B-8	TP8006	A-8
QR8012	A-5	TP8006	A-8
Integrated Circuit		Adjustment	
IC3001	D-7	VR3001	C-8
IC3002	C-3	VR3002	D-5
		VR3003	C-6
		VR3004	B-6
		VR3006	B-5
		VR3007	B-5
		VR3009	C-7
		VR3010	D-8
		VR3012	B-5
		VR3013	C-6
		VR8001	B-7
		VR8002	B-6
		VR8005	B-9
		VR8006	B-7
		VR8007	A-8
Connector		Connector	
P3001	D-1	P3001	D-1

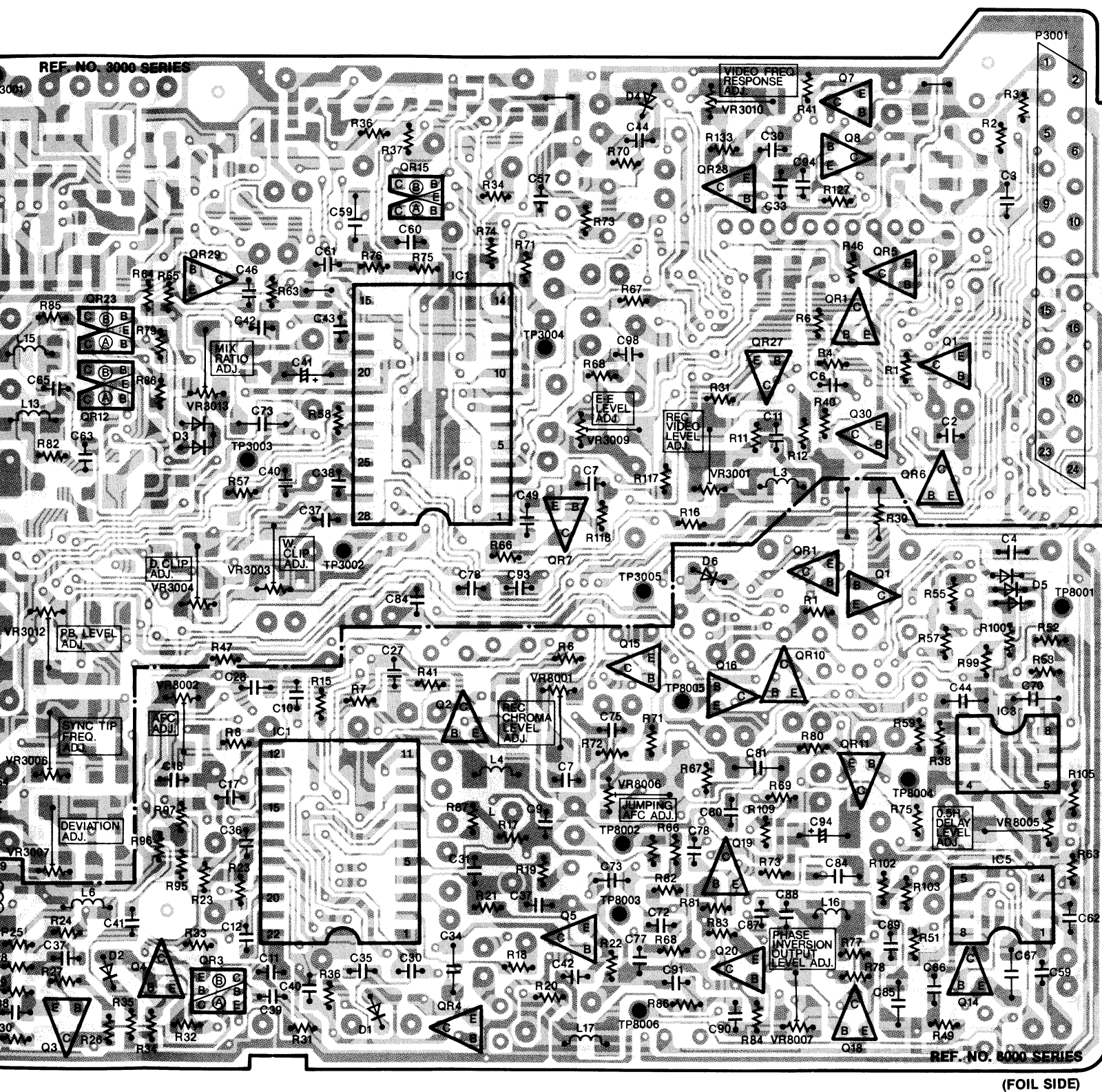
ADDRESS INFORMATION  
⊙ ... COMPONENT SIDE  
⊕ ... FOIL SIDE



(COMPONENT SIDE)







IC3001 (AN3217S)

PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
1		14	
2		15	
4		15	
6		16	
8		16	
8		17	
10		19	
10		19	
12		22	
		25	

IC3002 (AN3321S)

PIN NO.	WAVEFORM
3	
8	
9	
12, 13	
16	
17	
19	
20	
24	
27, 29	
30	

IC8002 (MN6163AS)

PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
2		13	
4		14	
6		16	
10		18	
4		14	
5		16	
6		18	
7		20, 21	
9		22	
11		22	

IC8001 (AN6367S)

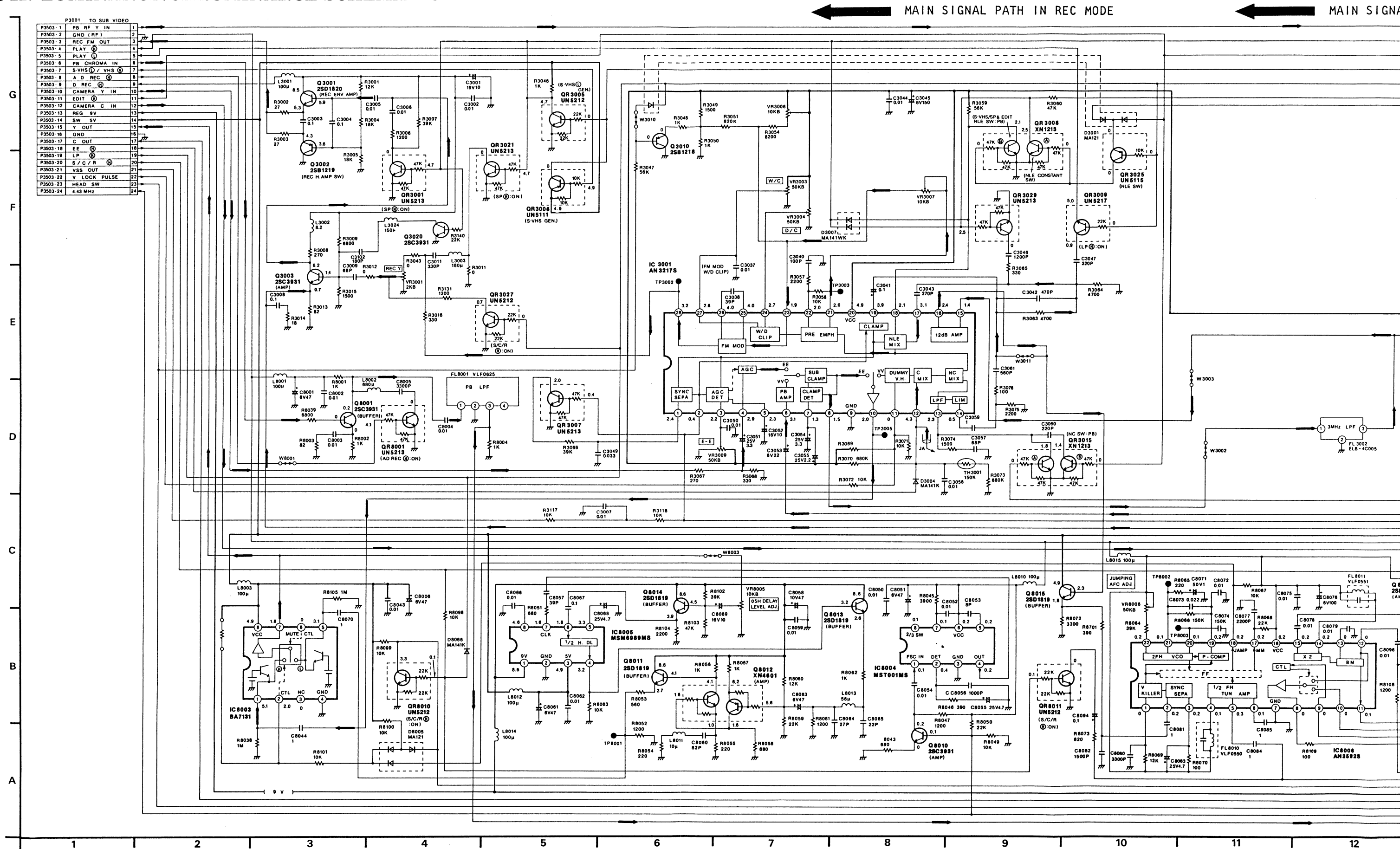
PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
4		14	
5		16	
6		18	
7		20, 21	
9		22	
11		22	

IC8006 (AN3592S)

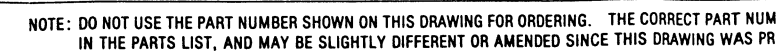
PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
1		14	
2		15	
8		17	
10		19	
11		20	
12			



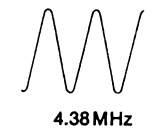
### 3-22. LUMINANCE/CHROMINANCE SCHEMATIC DIAGRAM



### MAIN SIGNAL PATH IN PLAYBACK MODE



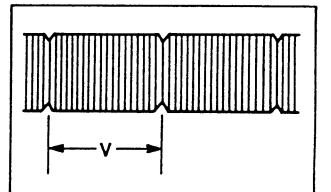
LUMINANCE & CHROMINANCE  
CIRCUIT TP (Test Point) WAVE FORM  
(REF No. 3000 Series)



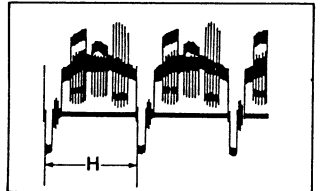
TP3002 REC  
0.2V/0.1μsec. div. 0.6Vp-p



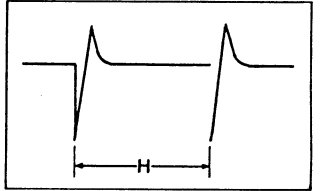
TP3003 REC  
0.1V/20μsec. div. 0.5Vp-p



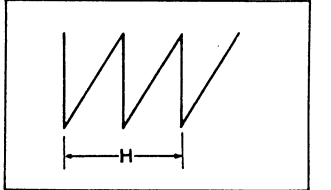
TP3005 PLAY  
50mV/5msec. div. 100Vp-p



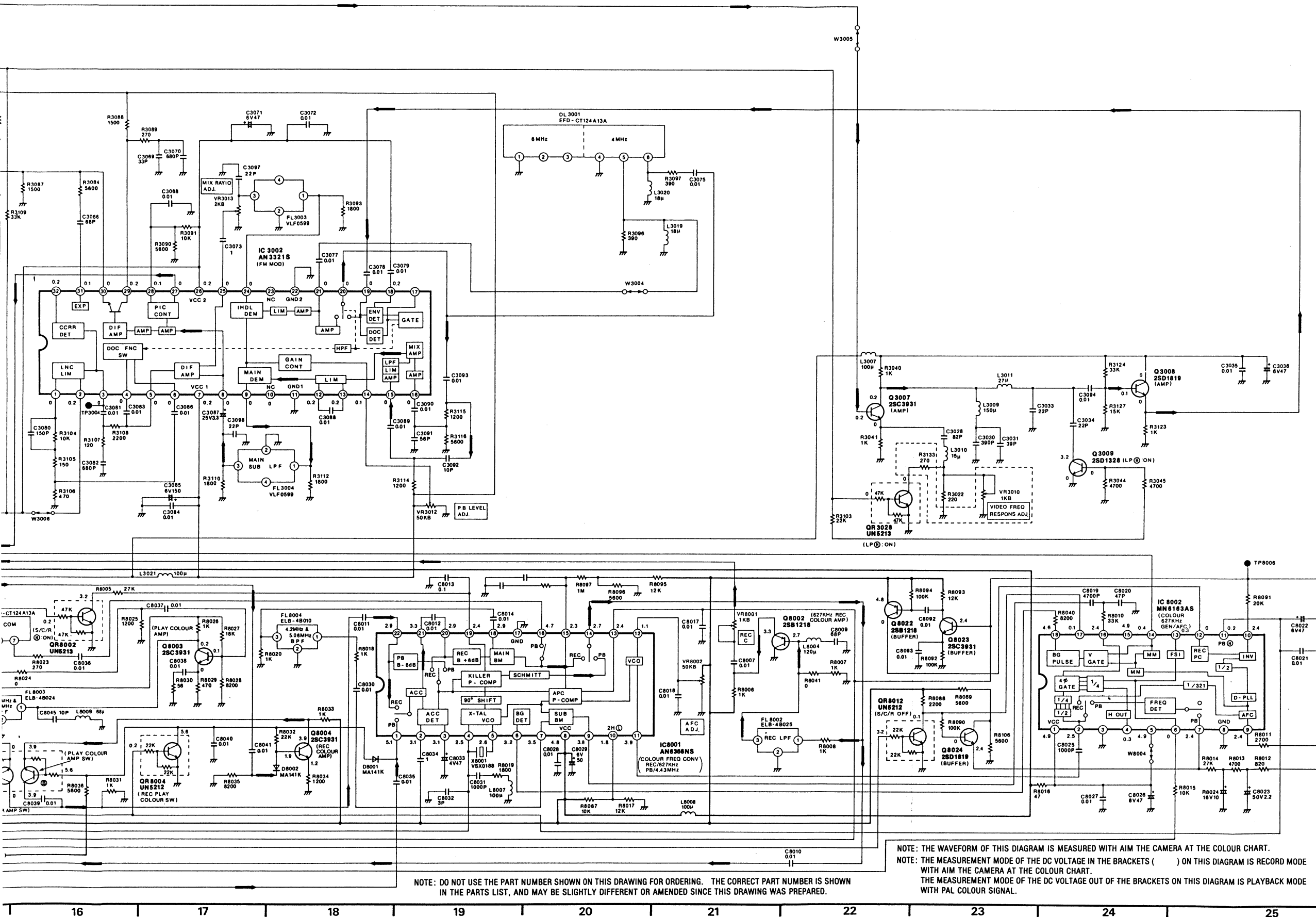
TP8001 PLAY  
0.5V/20μsec. div. 1Vp-p



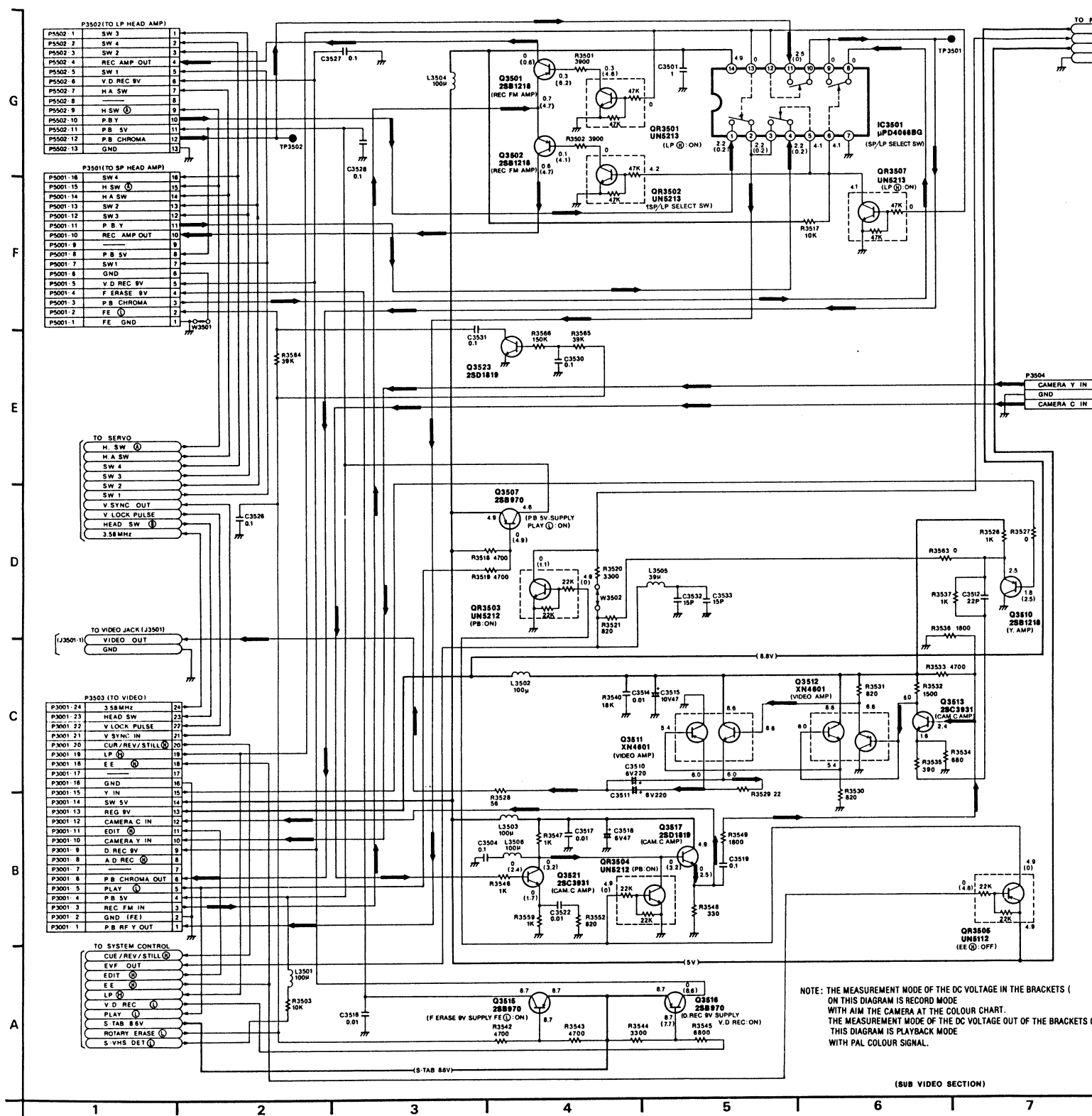
TP8002 PLAY  
50mV/20μsec. div. 160Vp-p



TP8003 PLAY  
0.5V/20μsec. div.



3-23. POWER SUPPLY/AUDIO/SUB VIDEO SCHEMATIC DIAGRAM



VIDEO MAIN SIGNAL PATH IN REC MODE

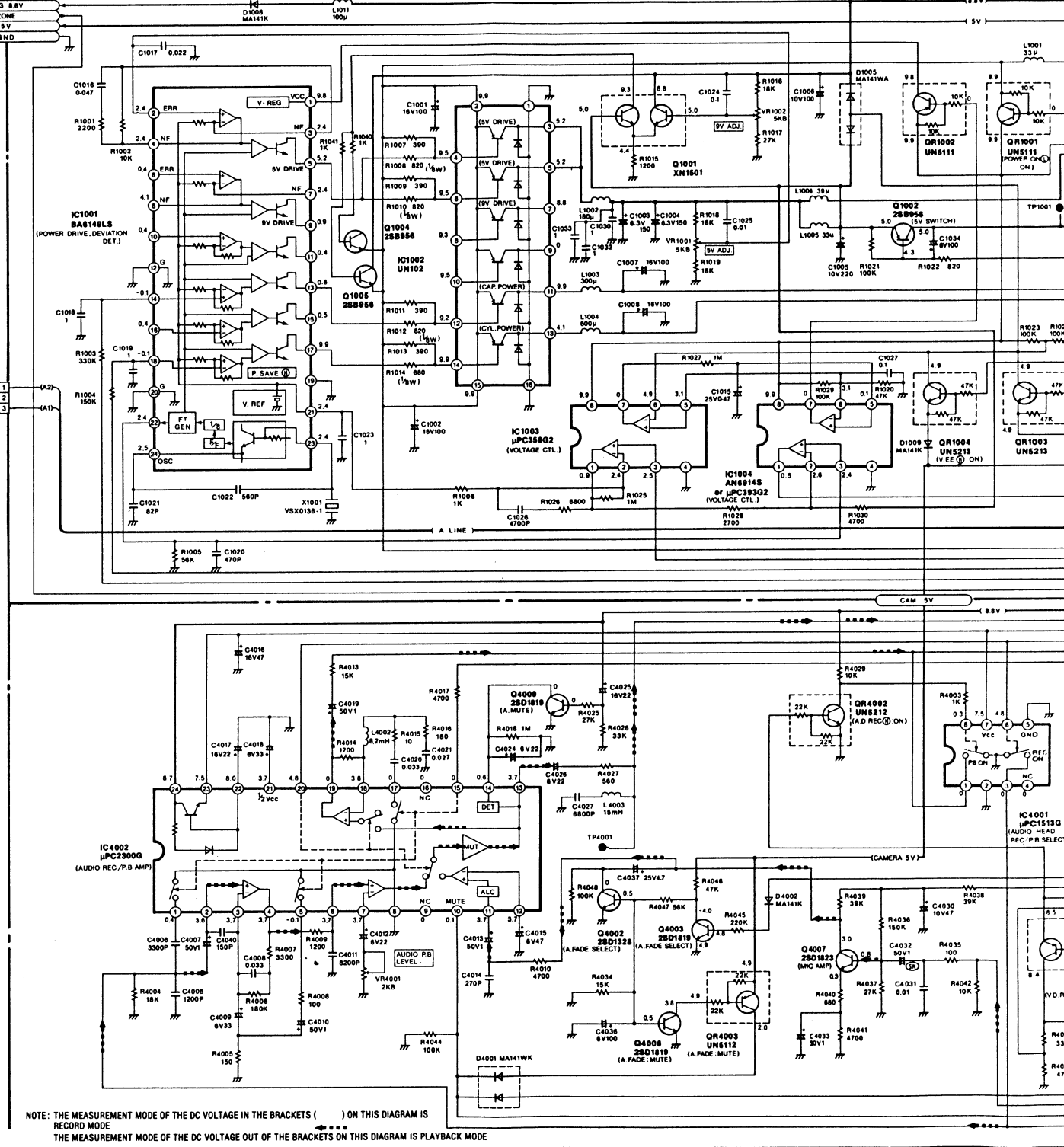
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

IMPORTANT SAFETY NOTICE:  
COMPONENTS IDENTIFIED WITH THE MARK  $\Delta$  HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.  
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

AUDIO MAIN SIGNAL PATH IN R

AUDIO MAIN SIGNAL PATH IN P

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.



MODE

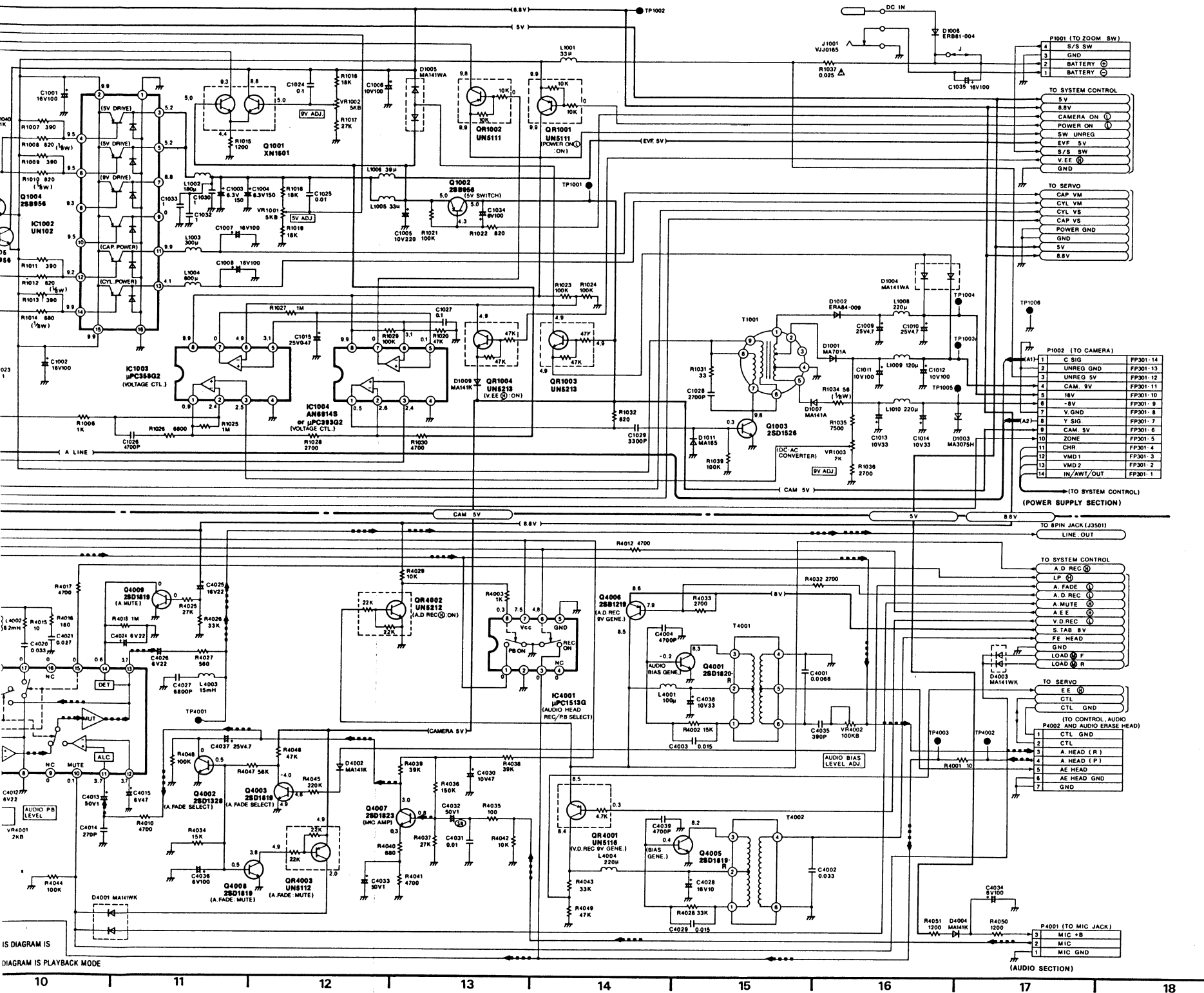
PLAYBACK MODE

SPECIAL CHARACTERISTICS FOR SAFETY.  
THE SAME TYPE.

← ■ ■ ■ ■ AUDIO MAIN SIGNAL PATH IN REC MODE  
← ■ ■ ■ ■ AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

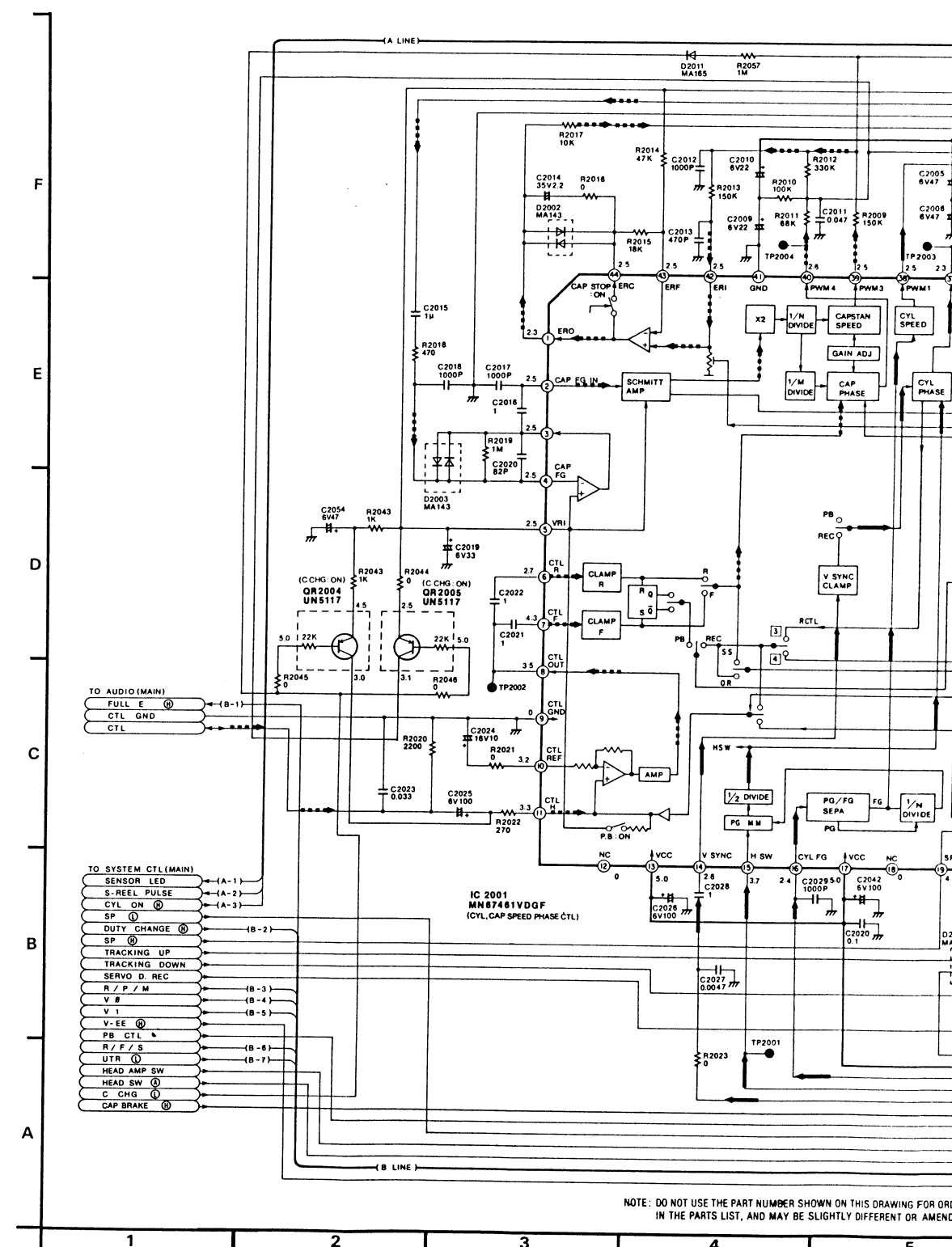
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN  
IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.



### 3-24. SERVO SCHEMATIC DIAGRAM

← CYLINDER  
← CYLINDER



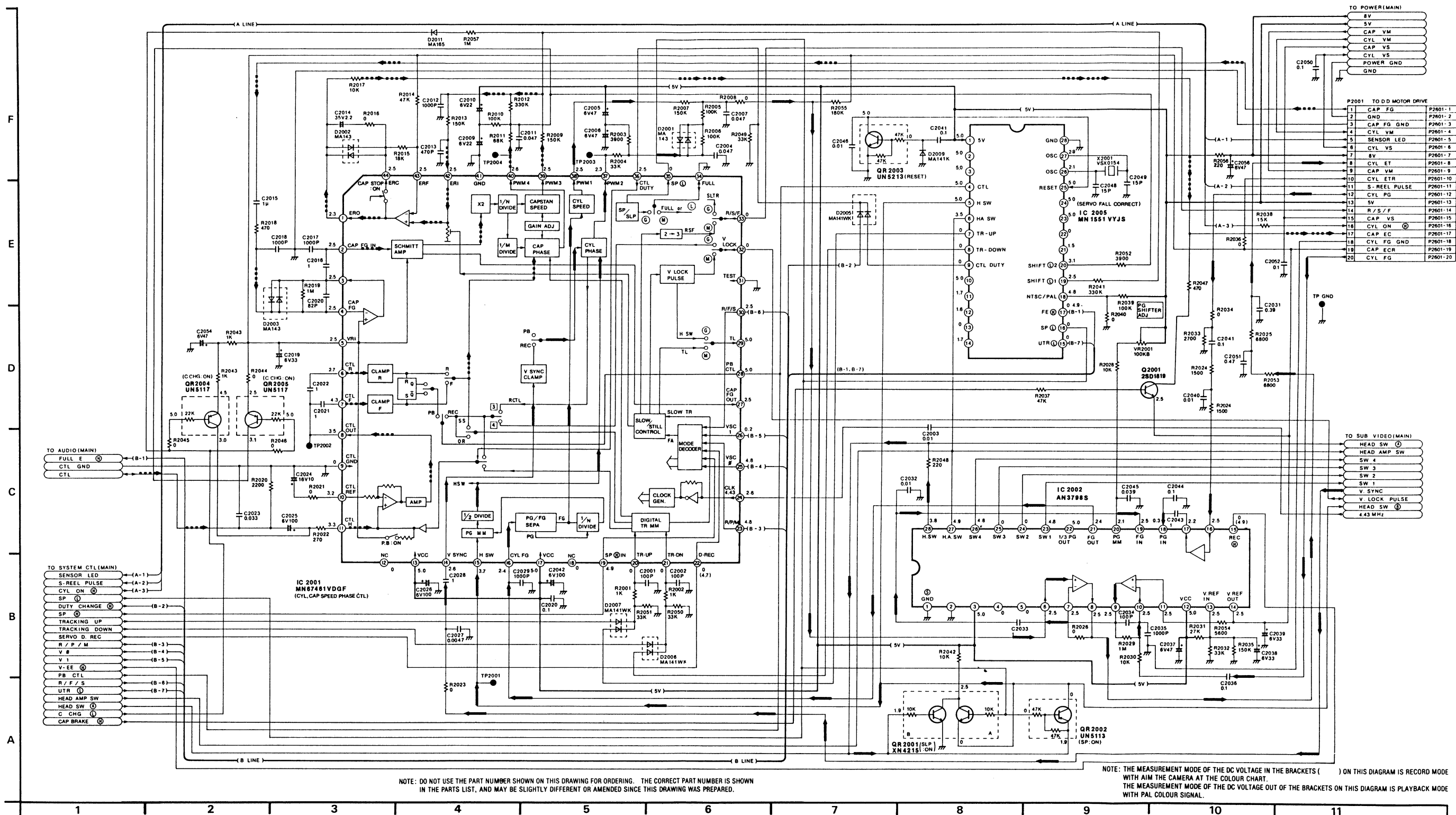
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN  
IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.



3-24. SERVO SCHEMATIC DIAGRAM

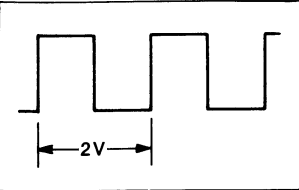
← CYLINDER SERVO PHASE LOOP  
← CYLINDER SERVO SPEED LOOP

← CAPSTAN SERVO PHASE LOOP  
← CAPSTAN SERVO SPEED LOOP

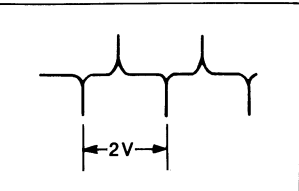


3-25. MAIN (POWER SUPPLY/AUDIO/SUB VIDEO/SERVO/SYSTEM CONTROL) C.B.A. (VEP06487A)

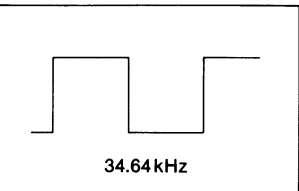
SERVO CIRCUIT TP (Test Point)  
WAVE FORM (REF No. 2000 Series)



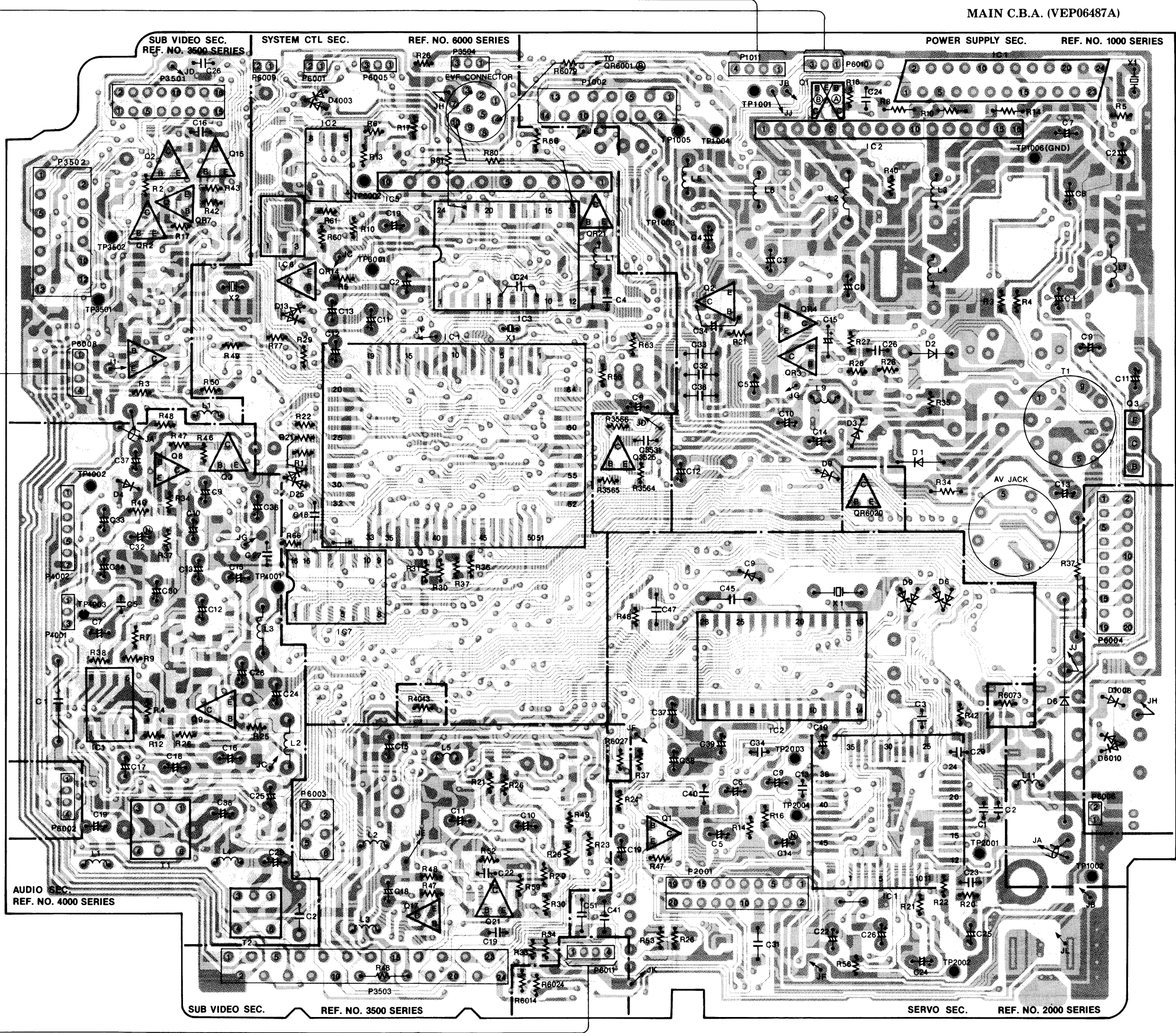
TP2001  
2V/10msec. div. 4Vp-p



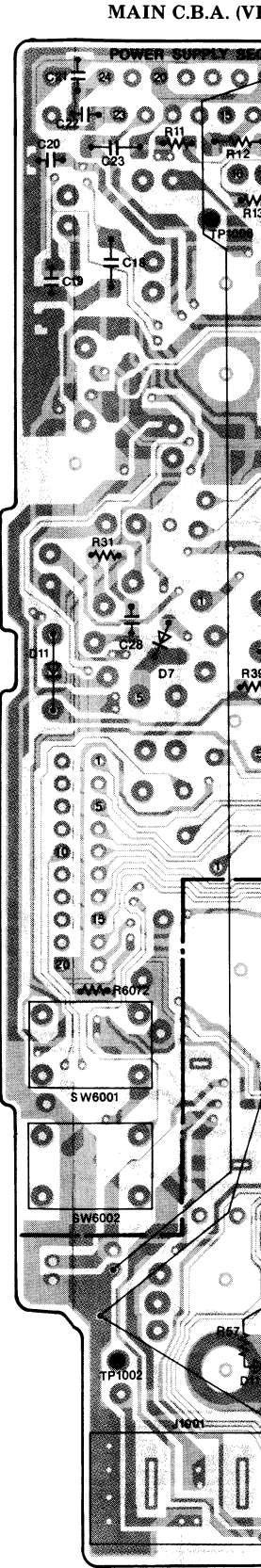
TP2002 PLAY  
0.5V/10msec. div. 1.8Vp-p



TP2003/TP2004 REC/PLAY  
2V/10μsec. div. 5Vp-p



(COMPONENT SIDE)



(FOIL SIDE)

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12



A)  
A)

1000 SERIES

CT111

3504

3504

3504

3504

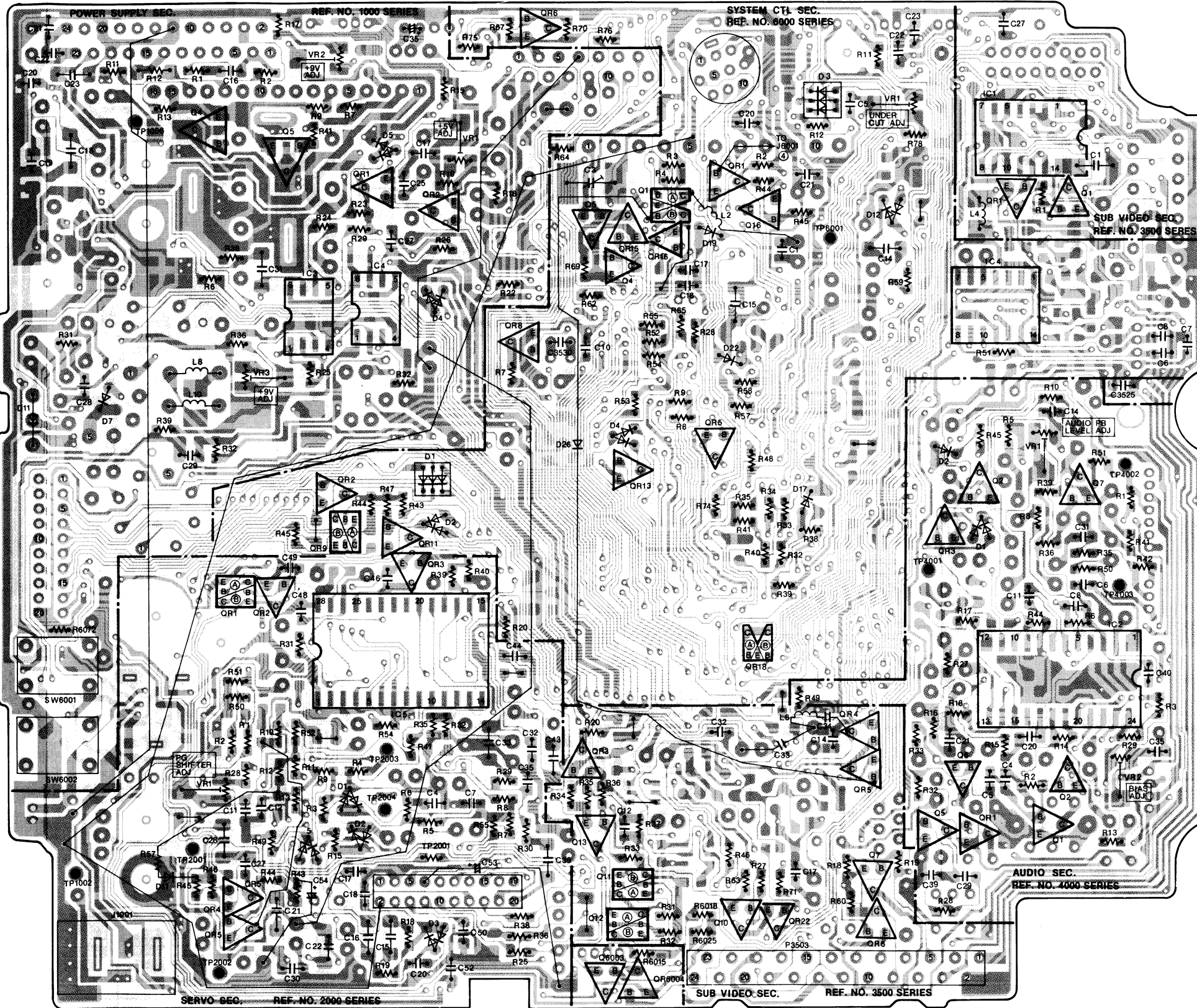
3504

3504

3504

3504

MAIN C.B.A. (VEP06487A)



(FOIL SIDE)

F

E

D

C

B

A

POWER SUPPLY Section		
Transistor		
Q1001	F-9	⊙
Q1002	E-9	⊙
Q1003	D-11	⊙
Transistor & Resistor		
QR1001	E-13	⊙
QR1002	E-14	⊙
QR1003	D-9	⊙
QR1004	E-9	⊙
QR1005	E-12	⊙
Integrated Circuit		
IC1001	F-10	⊙
IC1002	F-10	⊙
IC1003	E-13	⊙
IC1004	E-13	⊙
Test Point		
TP1001	F-9	⊙
TP1002	E-11	⊙
TP1003	E-9	⊙
TP1004	F-9	⊙
TP1005	F-9	⊙
TP1006	E-10	⊙
Adjustment		
VR1001	E-14	⊙
VR1002	F-13	⊙
VR1003	D-13	⊙
Connector		
P1002	F-8	⊙
P1011	F-9	⊙

ADDRESS INFORMATION  
⊙ ... COMPONENT SIDE  
⊙ ... FOIL SIDE

SERVO Section		
Transistor & Resistor		
QR2001	C-13	⊙
QR2002	C-13	⊙
QR2003	C-14	⊙
QR2004	A-13	⊙
QR2005	B-13	⊙
Integrated Circuit		
IC2001	B-10	⊙
IC2002	B-9	⊙
IC2005	C-14	⊙
Test Point		
TP2001	B-10	⊙
TP2001	B-13	⊙
TP2002	B-10	⊙
TP2002	A-13	⊙
TP2003	B-9	⊙
TP2003	B-13	⊙
TP2004	B-13	⊙
TP2004	B-9	⊙
Adjustment		
VR2001	B-13	⊙
Connector		
P2001	B-9	⊙
P2001	B-14	⊙

ADDRESS INFORMATION  
⊙ ... COMPONENT SIDE  
⊙ ... FOIL SIDE

AUDIO Section		
Transistor		
Q4001	B-17	⊙
Q4002	D-17	⊙
Q4003	D-6	⊙
Q4007	D-17	⊙
Q4009	C-6	⊙
Transistor & Resistor		
QR4001	B-16	⊙
QR4003	C-16	⊙
QR4005	B-16	⊙
Integrated Circuit		
IC4001	B-6	⊙
IC4002	B-17	⊙
Test Point		
TP4001	C-7	⊙
TP4001	C-16	⊙
TP4002	D-6	⊙
TP4002	D-17	⊙
TP4003	C-6	⊙
TP4003	C-17	⊙
Adjustment		
VR4001	D-17	⊙
VR4002	B-17	⊙
Connector		
P4001	C-5	⊙
P4002	C-5	⊙

ADDRESS INFORMATION  
⊙ ... COMPONENT SIDE  
⊙ ... FOIL SIDE

SUB VIDEO Section		
Transistor		
Q3501	E-17	⊙
Q3502	E-6	⊙
Q3507	B-16	⊙
Q3510	A-15	⊙
Q3511	B-15	⊙
Q3512	A-15	⊙
Q3513	B-14	⊙
Q3515	E-6	⊙
Transistor & Resistor		
QR3501	E-17	⊙
QR3502	E-6	⊙
QR3503	B-14	⊙
QR3504	B-16	⊙
QR3505	B-16	⊙
QR3506	A-16	⊙
QR3507	E-6	⊙
QR3517	A-7	⊙
QR3521	A-8	⊙
Integrated Circuit		
IC3501	E-17	⊙
Test Point		
TP3501	E-6	⊙
TP3501	E-17	⊙
Connector		
P3501	F-6	⊙
P3502	E-6	⊙
P3503	A-7	⊙
P3504	F-8	⊙

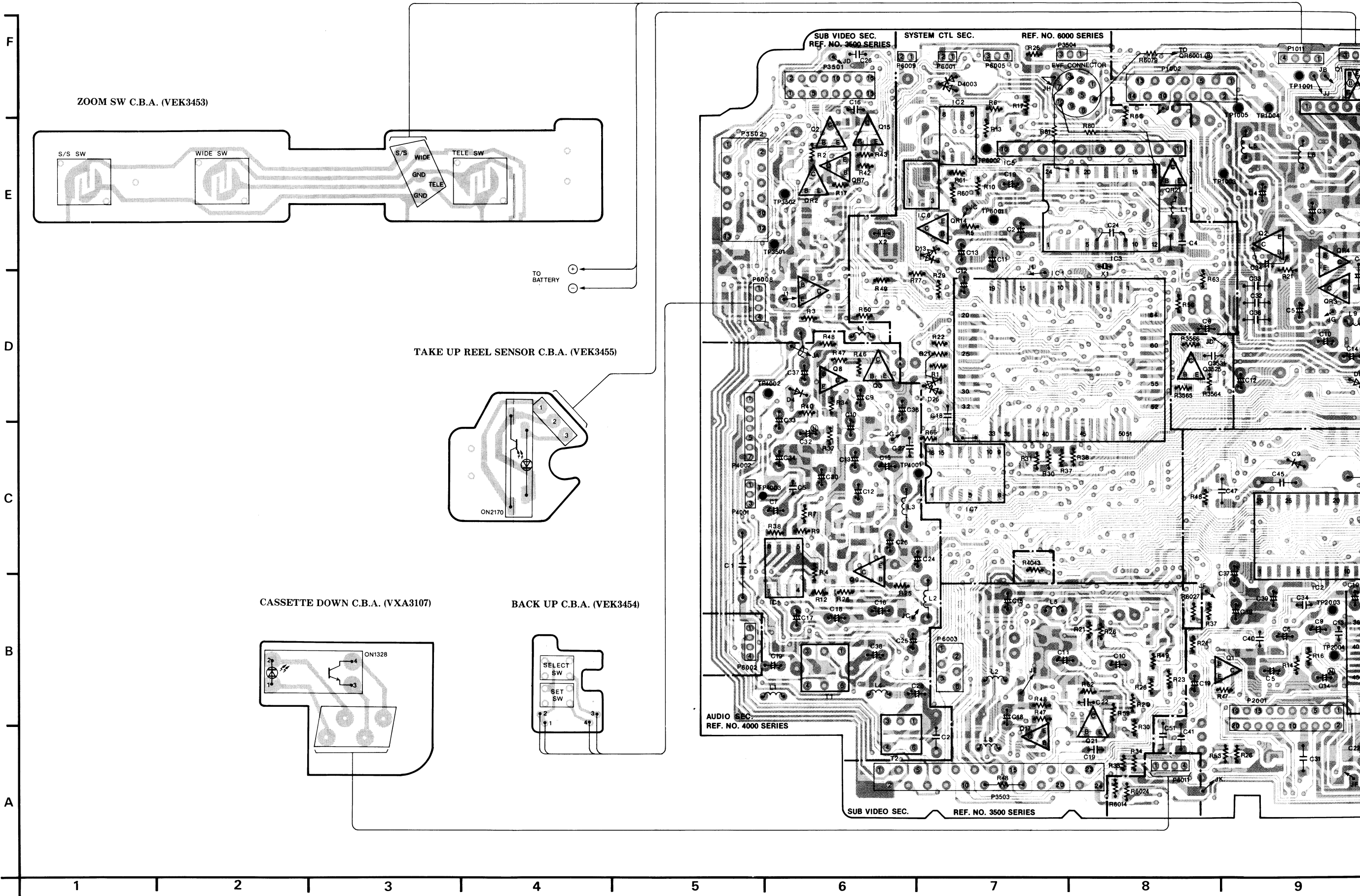
ADDRESS INFORMATION  
⊙ ... COMPONENT SIDE  
⊙ ... FOIL SIDE



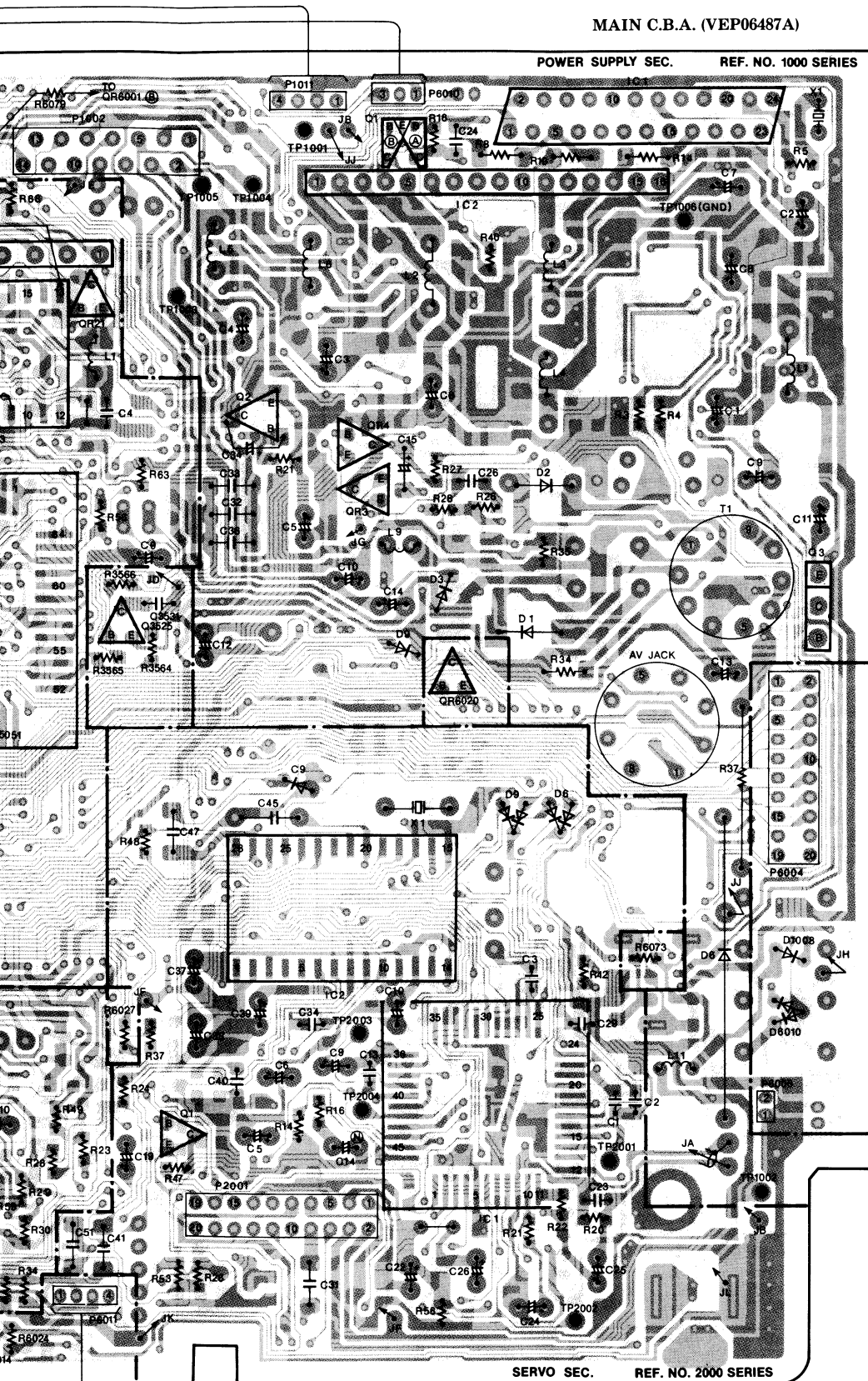
3-26. MAIN (SYSTEM CONTROL/POWER SUPPLY/AUDIO/SUB VIDEO/SERVO) C.B.A. (VEP06487A)

SYSTEM CONTROL Section		
Transistor		
Q6003	A-15	Ⓢ
Q6005	E-14	Ⓢ
Q6016	E-15	Ⓢ
Transistor & Resistor		
QR6001	E-15	Ⓢ
QR6002	D-13	Ⓢ
QR6004	A-15	Ⓢ
QR6005	D-15	Ⓢ
QR6006	F-15	Ⓢ
QR6008	D-14	Ⓢ
QR6009	C-13	Ⓢ
QR6011	C-13	Ⓢ
QR6013	D-15	Ⓢ
QR6014	E-7	Ⓢ
QR6015	E-15	Ⓢ
QR6018	C-15	Ⓢ
Integrated Circuit		
IC6001	D-8	Ⓢ
IC6002	F-7	Ⓢ
IC6003	E-8	Ⓢ
IC6004	E-16	Ⓢ
IC6005	E-7	Ⓢ
IC6006	E-7	Ⓢ
IC6007	C-7	Ⓢ
Test Point		
TP6001	E-7	Ⓢ
TP6001	E-16	Ⓢ
Connector		
P6001	F-7	Ⓢ
P6002	B-5	Ⓢ
P6003	B-7	Ⓢ
P6004	C-11	Ⓢ
P6005	F-7	Ⓢ
P6006	B-11	Ⓢ
P6008	D-6	Ⓢ
P6009	F-7	Ⓢ
P6011	A-8	Ⓢ

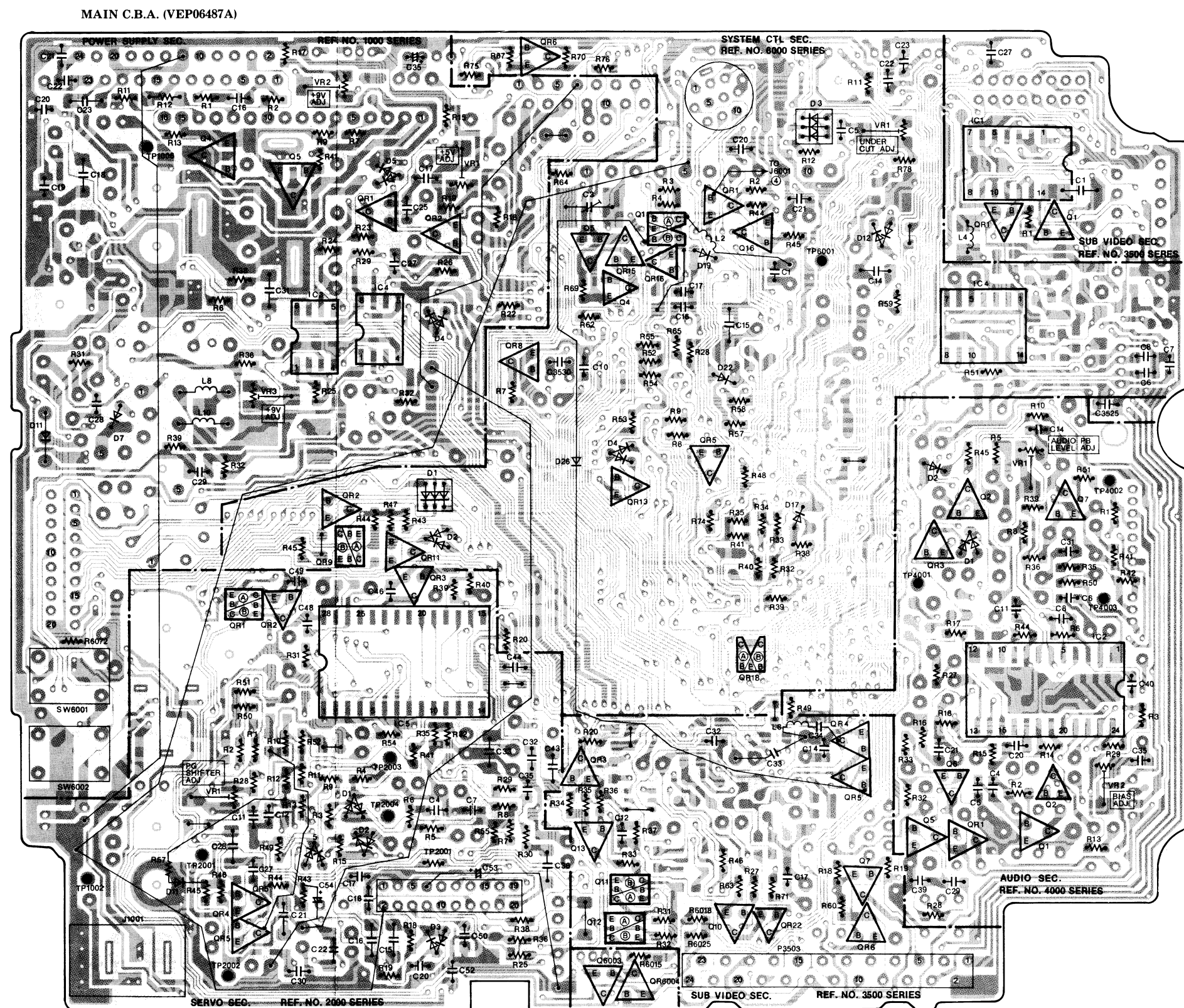
ADDRESS INFORMATION  
Ⓢ --- COMPONENT SIDE  
Ⓢ --- FOIL SIDE





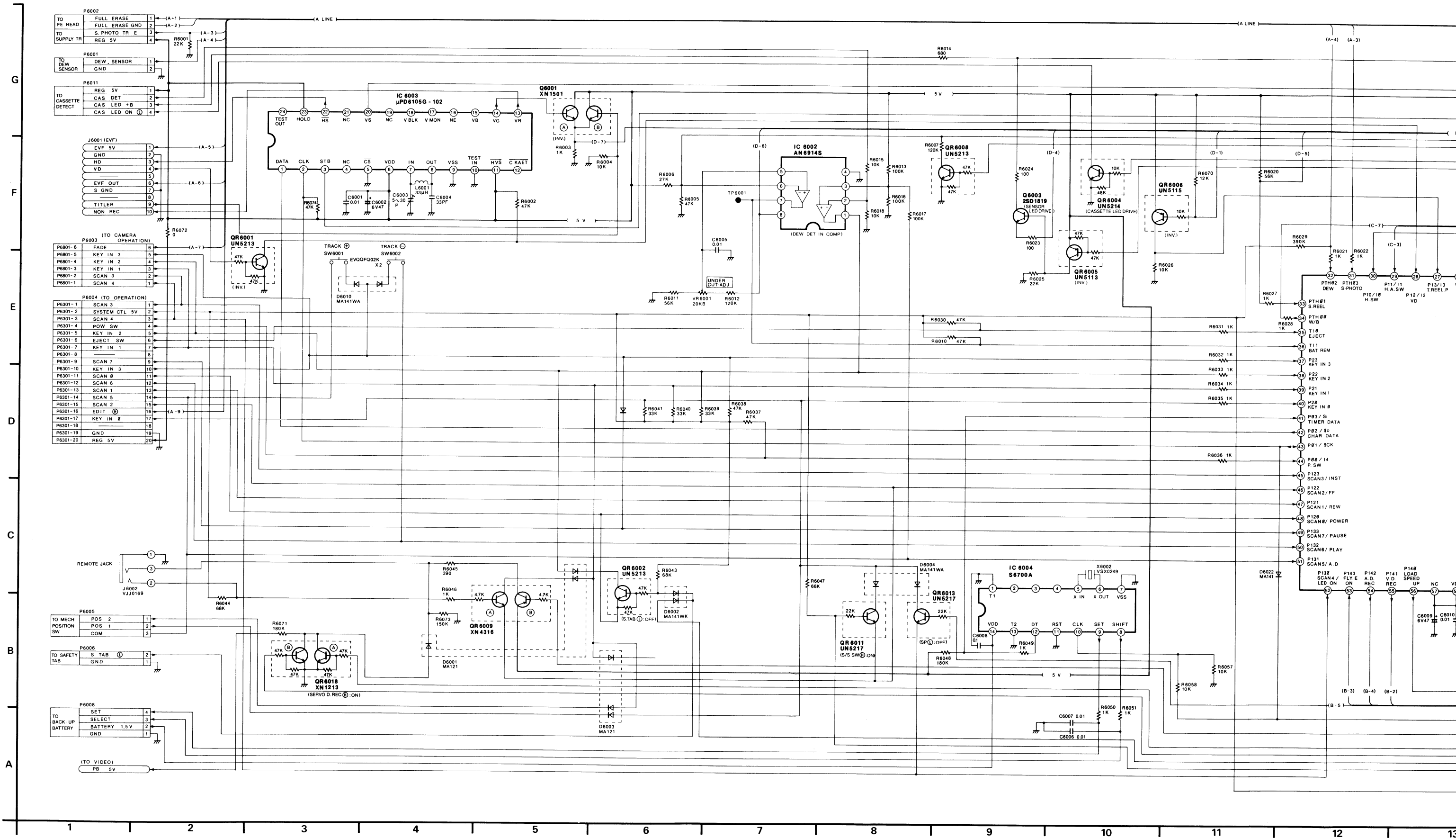


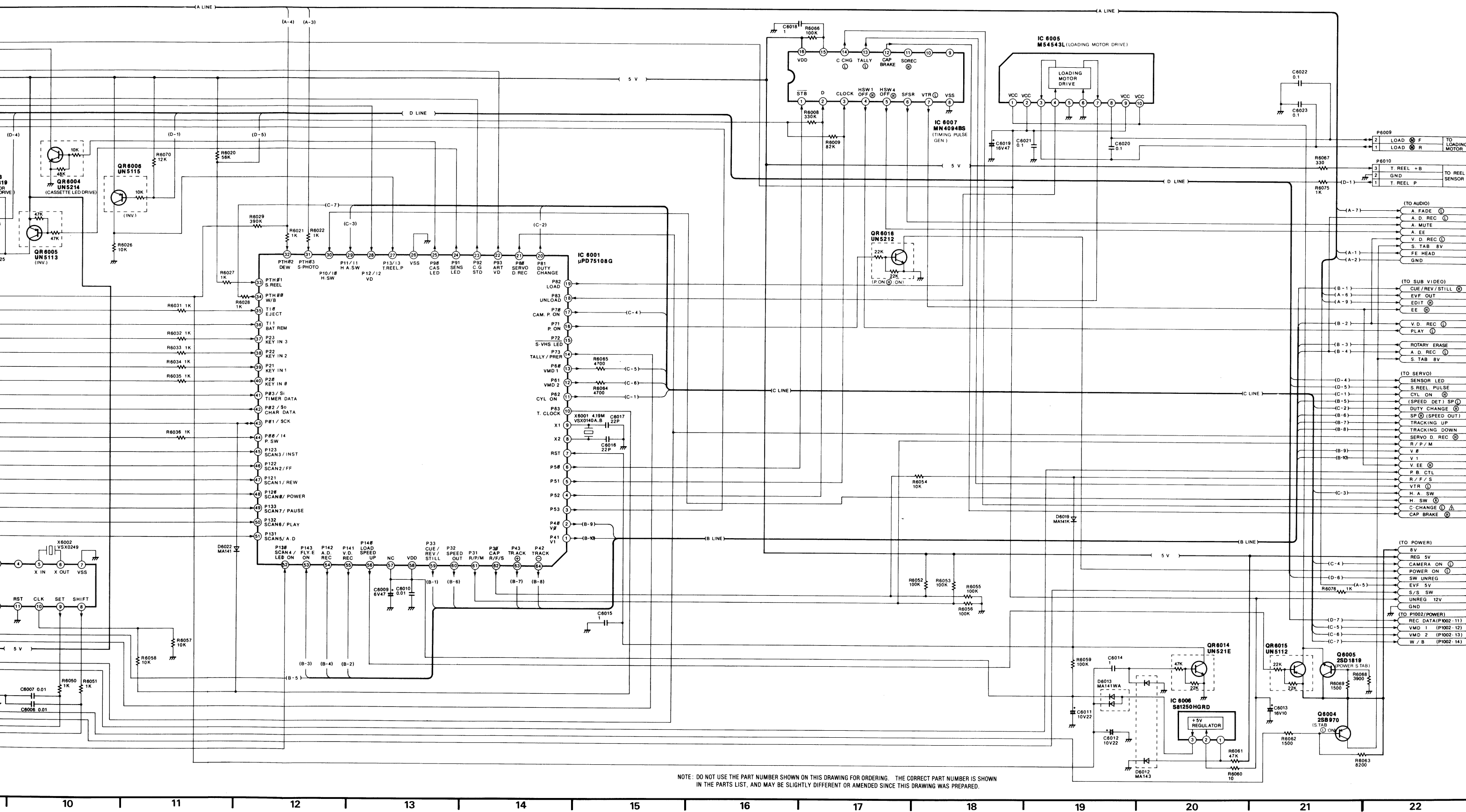
(COMPONENT SIDE)



(FOIL SIDE)

3-27. SYSTEM CONTROL SCHEMATIC DIAGRAM







SYSTEM CONTROL Section ICs VOLTAGE CHART (SP MODE)

REF. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	4.9	4.9	4.9	4.9	0	4.9	2.6	—	4.8	0	0	0	4.9	4.9	4.9	0.1	0	0	0
PLAY	0	4.9	4.9	4.9	4.9	0	4.9	2.6	0	4.8	0	0	0	4.9	0	4.9	4.9	0	0	0
REC	0.2	4.9	4.9	4.9	4.9	0.2	4.9	2.6	—	4.8	4.9	0.2	0.2	0	4.9	4.9	0.3	0.1	0.1	0.1

REF. NO.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	4.9	0	4.9	3.9	0	0	0.3	2.4	1.8	0	0	4.7	0.1	4.8	4.8	4.8	4.8	4.5	0.7
PLAY	0	0	0	4.9	0	0	—	0.3	0	1.8	0	0	2.4	0	4.8	4.8	4.8	4.8	1.0	4.4
REC	4.9	4.9	0.1	4.9	0	0	2.4	0.3	2.4	1.8	0	0	2.4	0.1	4.8	4.8	4.8	4.8	1.1	4.4

REF. NO.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	4.4	2.5	4.6	4.8	5.5	5.6	4.9	0.3	5.3	5.0	4.1	0.3	8.8	7.8	8.8	8.8	4.9	0	0	0
PLAY	4.4	2.5	4.6	4.8	4.5	4.3	3.3	0.3	4.5	0.4	4.1	0.3	8.8	7.8	8.8	8.8	4.9	4.9	0	4.9
REC	4.4	2.5	4.6	4.8	3.8	4.7	3.8	0	4.8	0.5	4.1	0.4	0	0	0.2	0	0	0	0	0

REF. NO.	61	62	63	64	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MODE	61	62	63	64	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
STOP	2.5	0	0	0	4.8	0	3.0	0	3.5	3.1	4.8	4.8								
PLAY	2.5	2.4	0	0	4.8	0	3.0	0	3.5	3.1	4.8	9.7								
REC	0	0	0.2	0	4.8	0	3.0	0	0	3.1	4.8	9.7								

REF. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	2.5	4.6	0.7	0	0	5.0	2.9	2.9	0	0	0	2.1	0	0	0	0	0	0	0	4.9
PLAY	2.5	4.6	0	0	0	4.9	2.9	2.9	0	0	0	2.3	0	0	0	0	0	0	0	4.9
REC	2.5	4.6	0.1	0	0	4.9	2.9	2.9	0	0	0	2.1	0	0	0	0	0	0	0	4.9

REF. NO.	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MODE	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
STOP	0	4.1	4.9	1.1	4.8	0	3.0	0	3.5	3.1	4.8	9.7								
PLAY	0	4.1	4.9	1.1	4.8	0	3.0	0	3.5	3.1	4.8	9.7								
REC	0	4.1	4.9	0.4	4.8	0	3.0	0	0	3.1	4.8	9.7								

REF. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	1.3	0	0	0.7	0.7	0	1.5	1.5	2.4	0	4.5	0	1.5						
PLAY	0	1.4	0	0	0.7	0.7	0	1.5	1.5	2.4	0	4.5	0	1.5						
REC	0	1.5	0	0	0.7	0.7	0	1.5	1.5	2.4	0	4.5	0	1.5						

REF. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	8.1	9.9	0	0	0	0	0	0	9.9	8.1										
PLAY	7.9	9.9	0	0	0	0	0	0	9.9	7.9										
REC	7.9	9.9	0.1	0.1	0	0	0.1	0	9.9	7.9										

REF. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0.5	9.7	5.6																	
PLAY	0.5	9.7	5.6																	
REC	0.5	9.7	5.6																	

REF. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	4.9	4.9	4.9	4.9	0	4.8	0	0	4.4	0	0	4.9	0	4.9	4.9				
PLAY	0	4.9	4.9	0.2	0	0	0	0	0	4.4	0	0	4.9	4.9	0	4.9				
REC	0.2	4.9	4.9	4.9	4.9	0	4.8	0	0	4.4	0	0	0	4.9	4.9	4.9				

SYSTEM CONTROL Section TRs VOLTAGE CHART (SP MODE)

REF. NO.	Q6001 ①	Q6001 ②	Q6003	Q6004	Q6005															
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B		
STOP	2.1	5.0	0	2.1	5.0	0	0.1	2.7	0	8.8	8.8	8.2	8.8	8.1	8.8					
PLAY	0	4.9	0	0	4.9	0	0.1	2.4	0	8.8	8.8	8.1	8.0	8.8	8.7					
REC	2.1	5.0	0	2.1	5.0	0	0.1	2.7	0	8.7	8.6	8.0	8.0	8.7	8.6					

REF. NO.	Q6001	Q6002	Q6004	Q6005	Q6006	Q6008														
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B		
STOP	0	0.3	3.9	0.3	5.5	0.4	0	9.7	0	5.0	0	4.9	5.0	4.9	3.9	0	0	4.9		
PLAY	0	0.3	3.8	0.3	5.4	0.4	0	9.7	0	4.9	0	4.9	4.9	2.3	4.4	0	0	4.9		
REC	0	0.3	3.8	0.4	5.7	0.4	0	9.7	0	5.0	0	4.9	5.0	2.3	4.0	0	0	4.9		

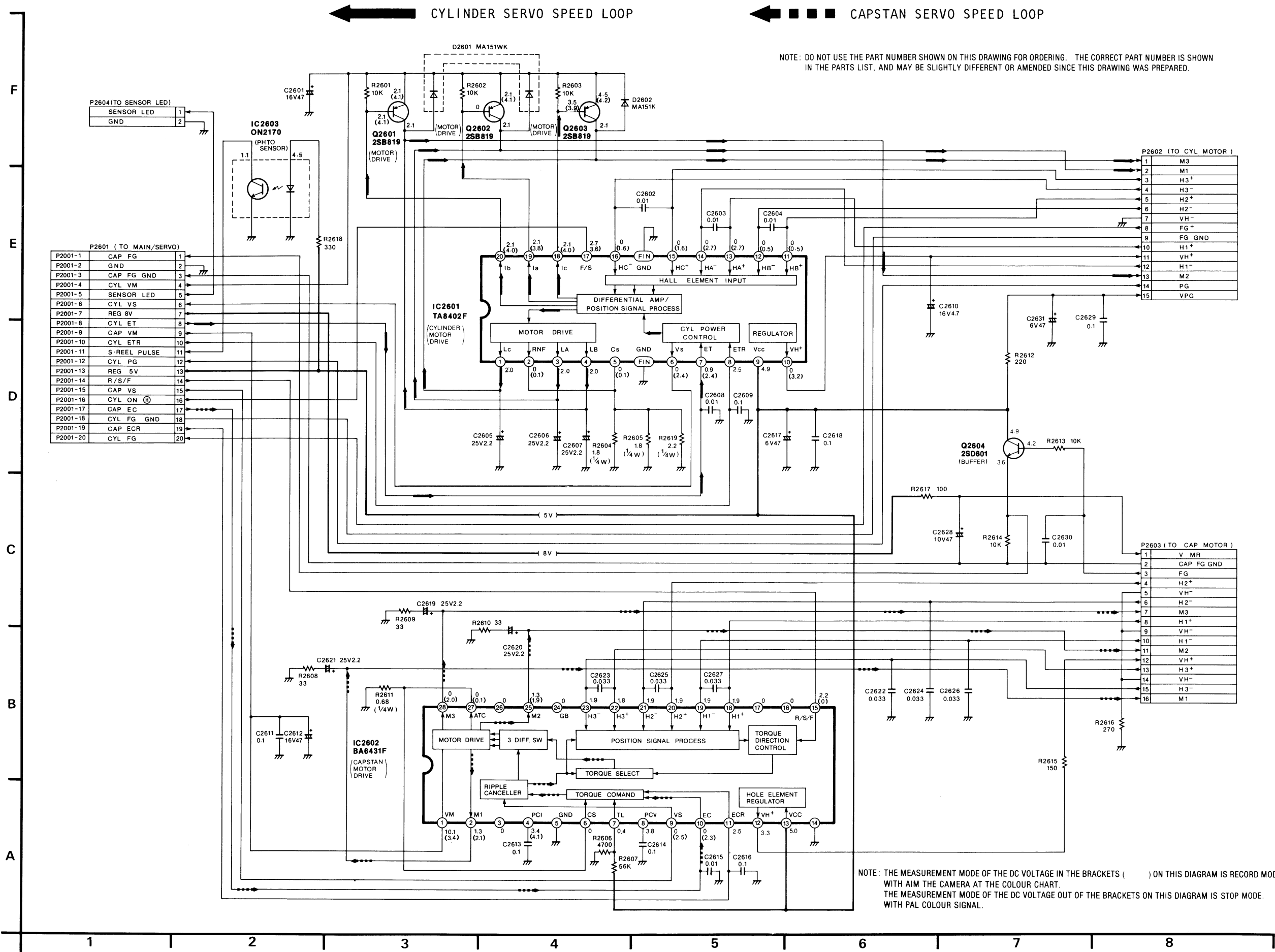
REF. NO.	Q6009 ①	Q6009 ②	Q6011	Q6012	Q6013	Q6014														
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B		
STOP	5.0	0	4.9	5.2	0	4.8	5.4	5.4	4.8	4.7	5.5	—0.1	0.3	5.6	0	0	4.9	0		
PLAY	4.9	0.8	4.9	4.9	4.9	4.8	5.1	5.2	4.8	0.4	4.3	—1.3	0.3	5.2	0.1	0	4.9	0		
REC	4.9	4.9	4.0	5.3	4.8	4.8	5.3	5.4	4.8	0.5	5.8	—2.8	0.4	5.0	0	0	4.9	0		

REF. NO.	Q6015	Q6016	Q6018 ①	Q6018 ②																
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B		
STOP	0	8.1	8.8	0	0	4.9	0	0	0	0	0	0	4.9							
PLAY	8.8	8.0	8.7	0	0	4.9	0	0	1.0	0	0	1.0	2.9							
REC	8.7	8.0	8.7	0	0	4.9	0	0	4.9	0	0	2.9								

DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

3-28. DRIVE SCHEMATIC DIAGRAM

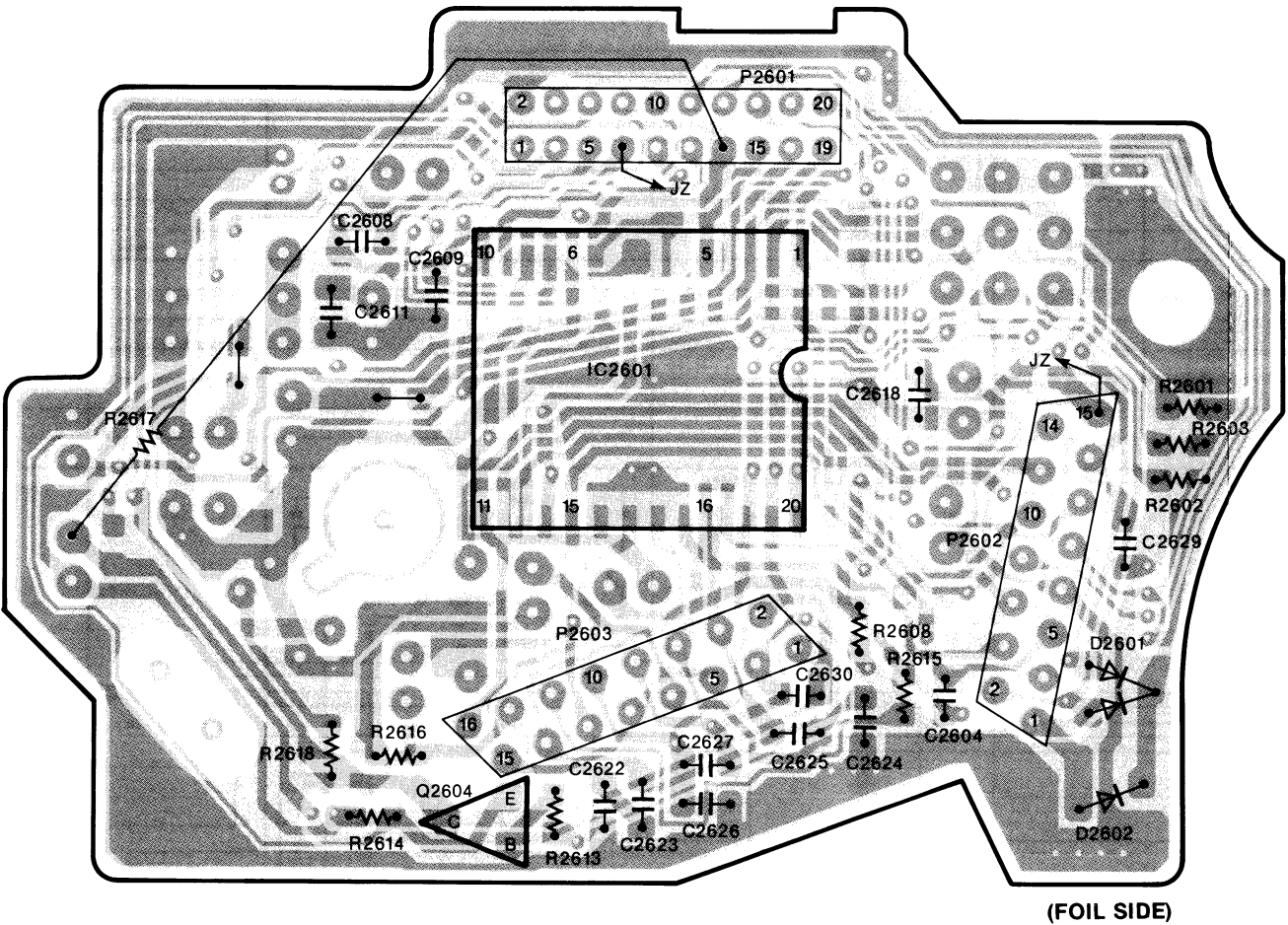
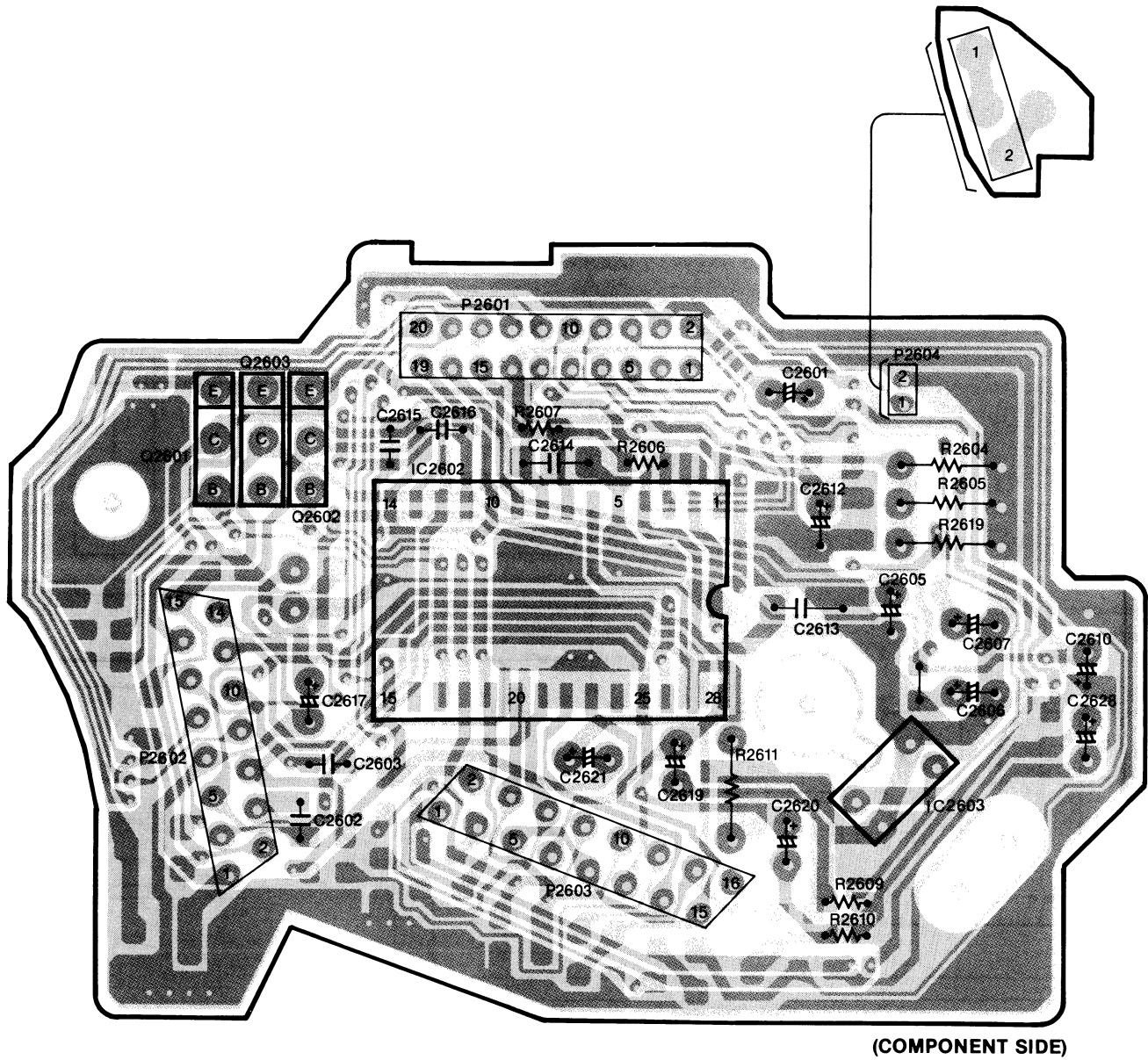
3-29. DRIVE C.B.A. (VEP022)



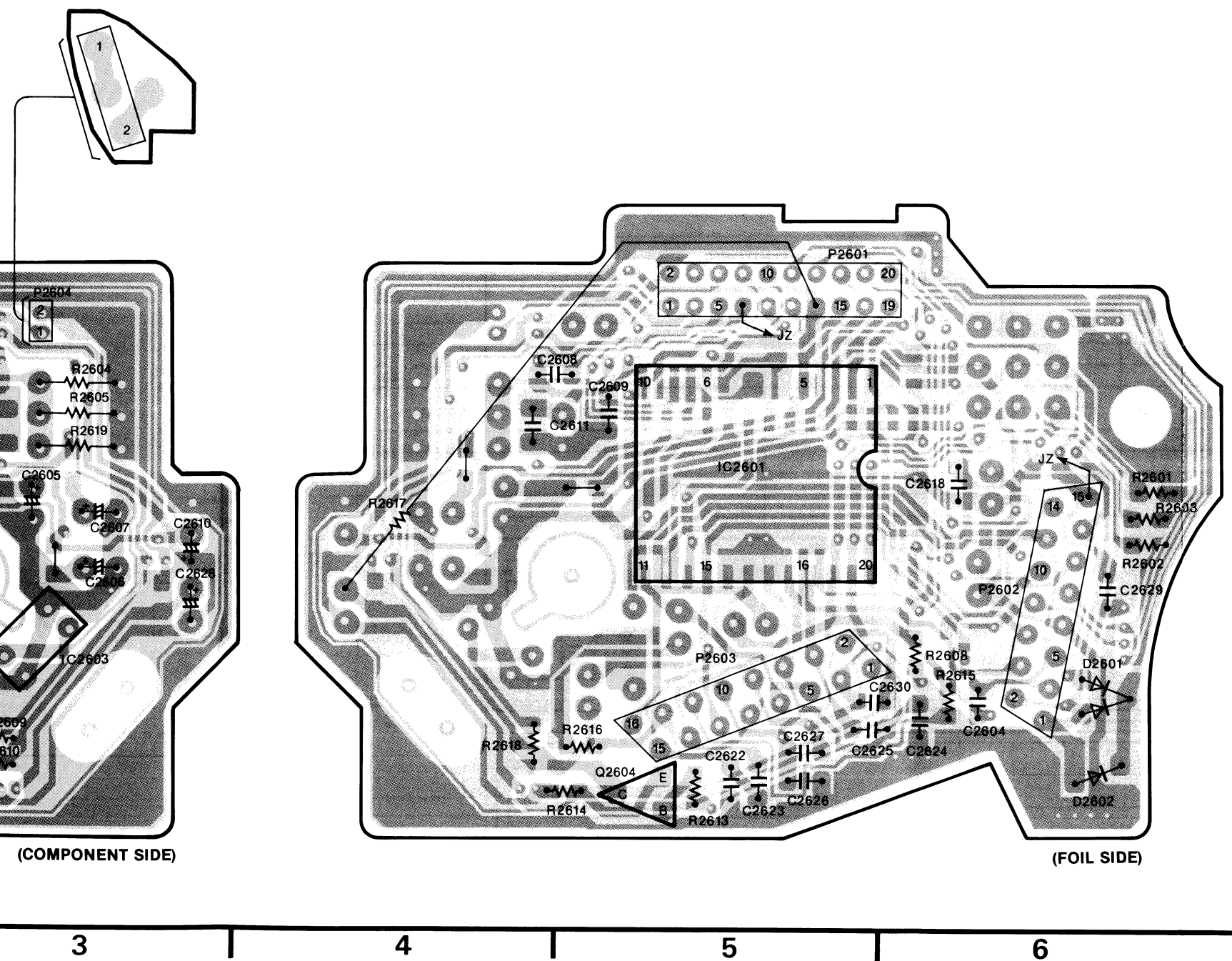
DRIVE C.B.A.		
Transistor		
Q2601	B-1	Ⓢ
Q2602	B-1	Ⓢ
Q2603	B-1	Ⓢ
Q2604	A-5	Ⓢ
Integrated Circuit		
IC2601	B-5	Ⓢ
IC2602	B-2	Ⓢ
IC2603	A-3	Ⓢ
Connector		
P2601	B-2	Ⓢ
P2602	A-1	Ⓢ
P2603	A-2	Ⓢ
P2604	B-3	Ⓢ

ADDRESS INFORMATION  
Ⓢ ... COMPONENT SIDE  
Ⓢ ... FOIL SIDE

SENSOR LED C.B.A. (VEP00K17A)



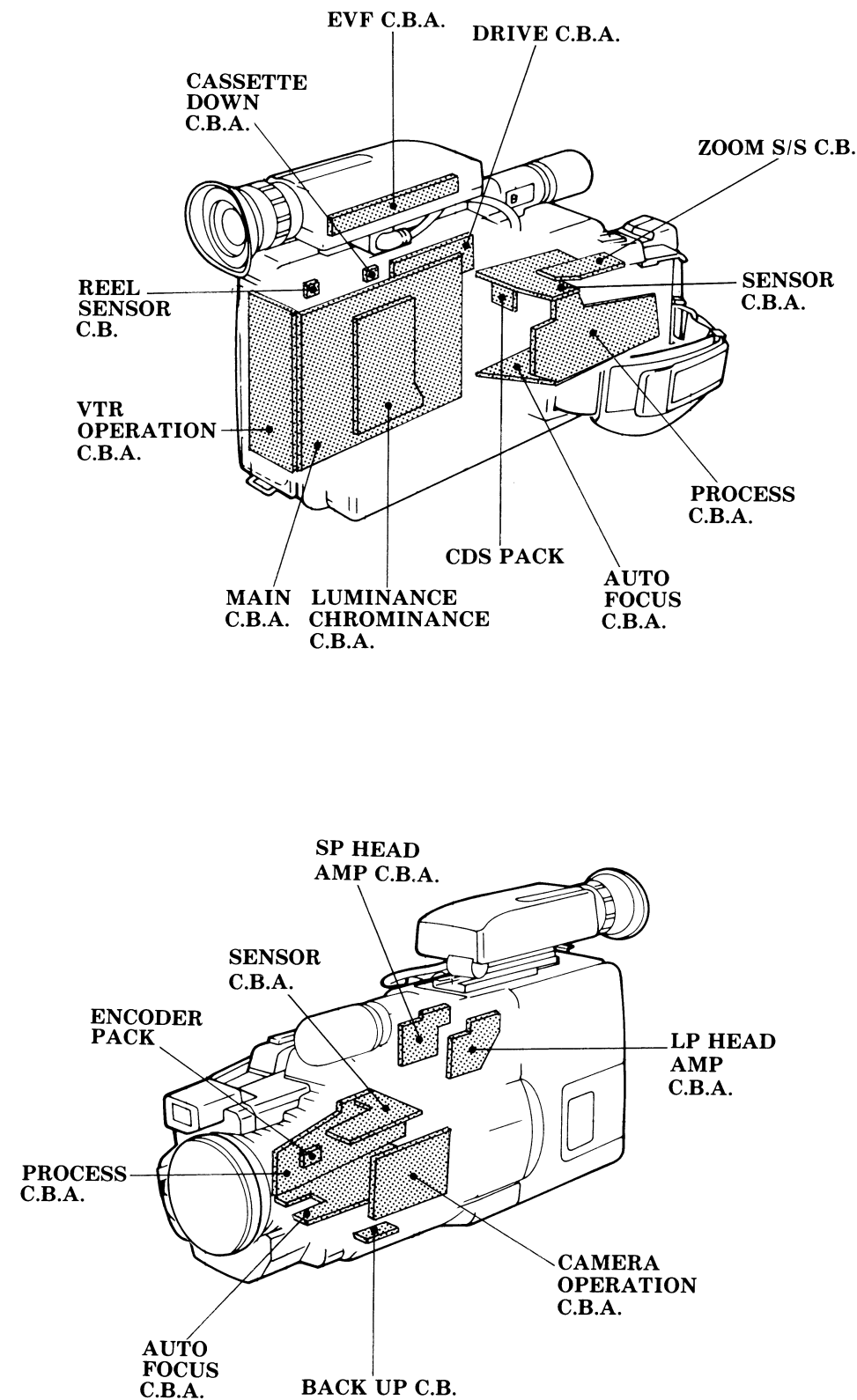
LED C.B.A. (VEP00K17A)



DRIVE C.B.A.		
Transistor		
Q2601	B-1	Ⓢ
Q2602	B-1	Ⓢ
Q2603	B-1	Ⓢ
Q2604	A-5	Ⓢ
Integrated Circuit		
IC2601	B-5	Ⓢ
IC2602	B-2	Ⓢ
IC2603	A-3	Ⓢ
Connector		
P2601	B-2	Ⓢ
P2602	A-1	Ⓢ
P2603	A-2	Ⓢ
P2604	B-3	Ⓢ

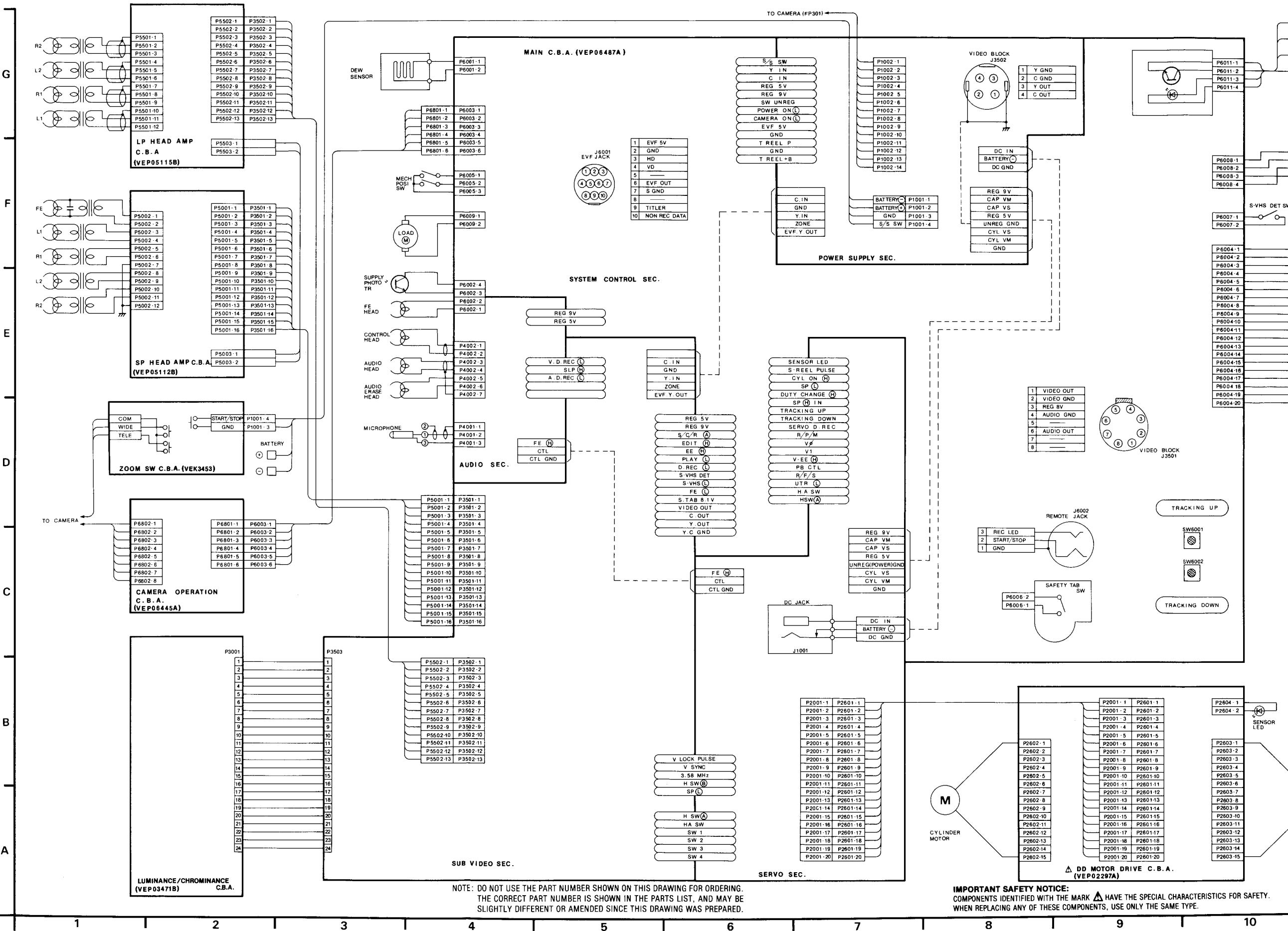
ADDRESS INFORMATION  
 Ⓢ ... COMPONENT SIDE  
 Ⓢ ... FOIL SIDE

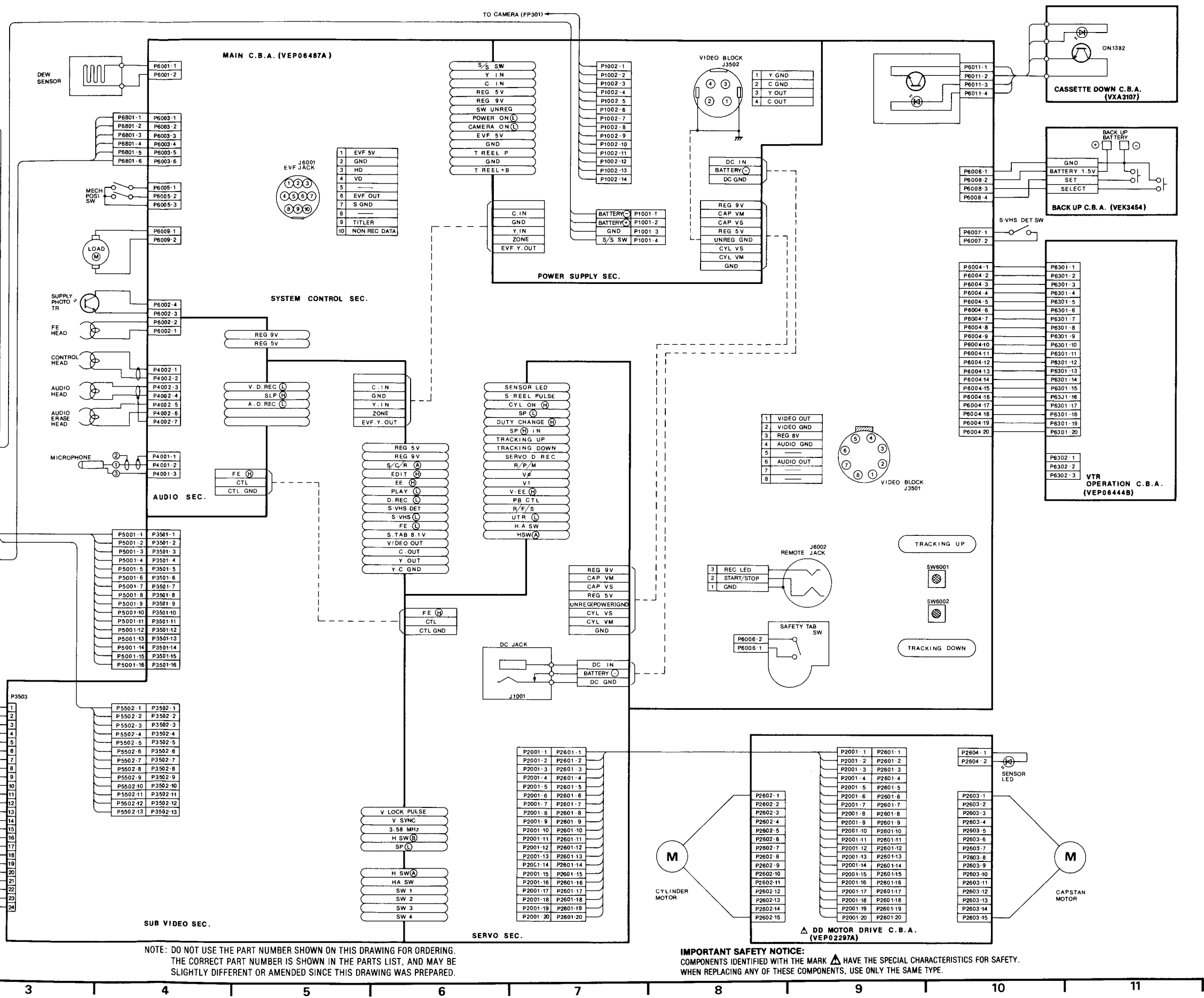
### 3-30. CIRCUIT BOARD LAYOUT





3-31. VTR INTERCONNECTION SCHEMATIC DIAGRAM





3-32. ICs & TRs INFORMATION  
GENERAL CIRCUIT PARTS

AN1324NS  
S6700A  
μPD4066BG

μPD9313GB  
MN67461VDJF

AN2010S  
MN4052BS  
MN4094BS

AN2583S  
AN2153S  
μPD6105G102

AN1358S  
μPC358G2  
μPC1513G  
AN6914S  
AN6562S  
NJM3415M  
MST001MS  
MSM6989MS  
MJM4558MP

2SA812 2SC3138  
2SA1022 2SC3930  
2SA1255 2SC3931  
2SA1532 2SC4176  
2SA1610 2SD968A  
2SB709 2SD1256  
2SB710 2SD1328  
2SB956 2SD1819  
2SB970 2SD1819R  
2SB1218 2SD1820  
2SB1219 2SD1820R  
2SB1220 2SD1823

2SA1175

AN2510S  
μPC2300G

AN3798S  
MN1551VYJS  
AN3215S

AN6367S  
AN3592S  
AN3311S

UN5213

UN5212

UN5112

UN5113

UN5115

UN5217

UN5111

XN1213

XN1501

XN4215

XN4601

XN1401

XN1113

PROCESS & ENCODER PACK

VCR0200

MC8181A

VCR0199

AN2253FA

2SD874

2SK316

UN5215

AUTO FOCUS

MN15865VYC

MN1280Q

AN78N05

SENSOR & C.D.S. PACK

MN53015XBM

μPD6147G

POWER SUPPLY

BA6149

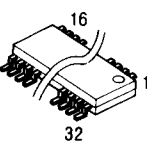
SYSTEM CONT

μPD7700

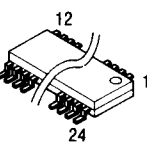
LUMINANCE &

AN3320

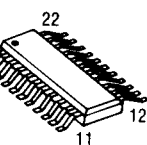
BA7100



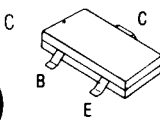
AN2583S  
AN2153S  
μPD6105G102



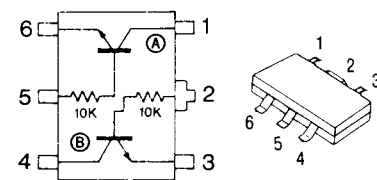
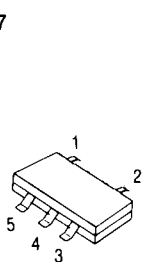
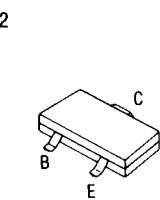
AN2510S  
μPC2300G



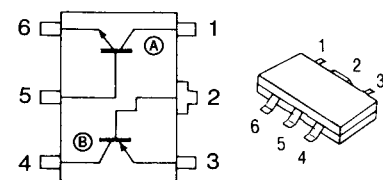
AN6367S  
AN3592S  
AN3311S



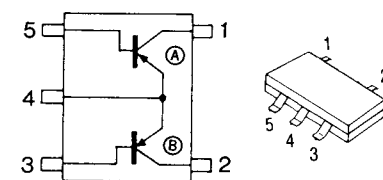
E



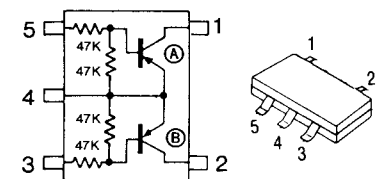
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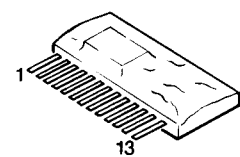


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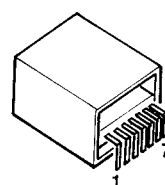


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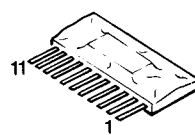
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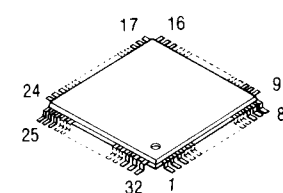
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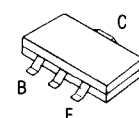
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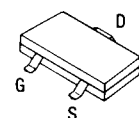
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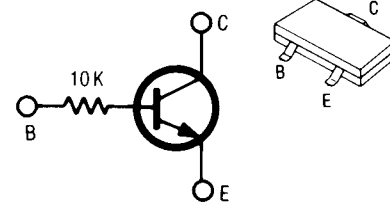
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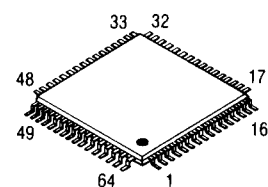


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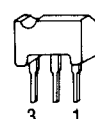


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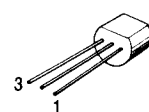
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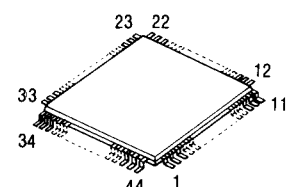


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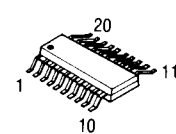


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### SENSOR & C.D.S. PACK

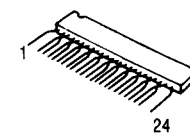


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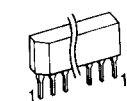


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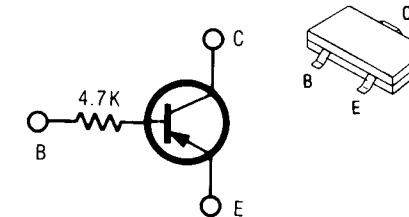
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BA6149LS

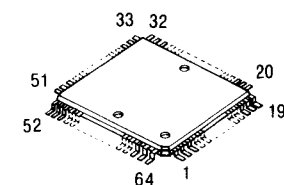


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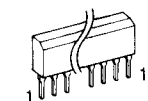


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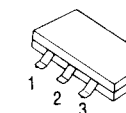
### SYSTEM CONTROL Section



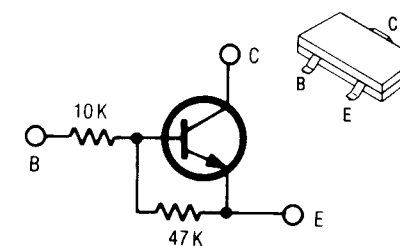
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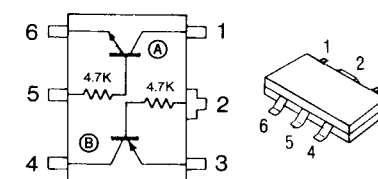
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S81250HGRD

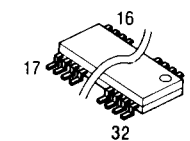


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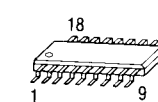


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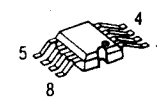
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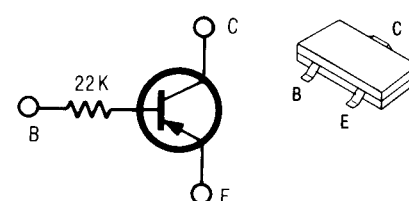
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VC2031FP  
MN6163AS



BA7131



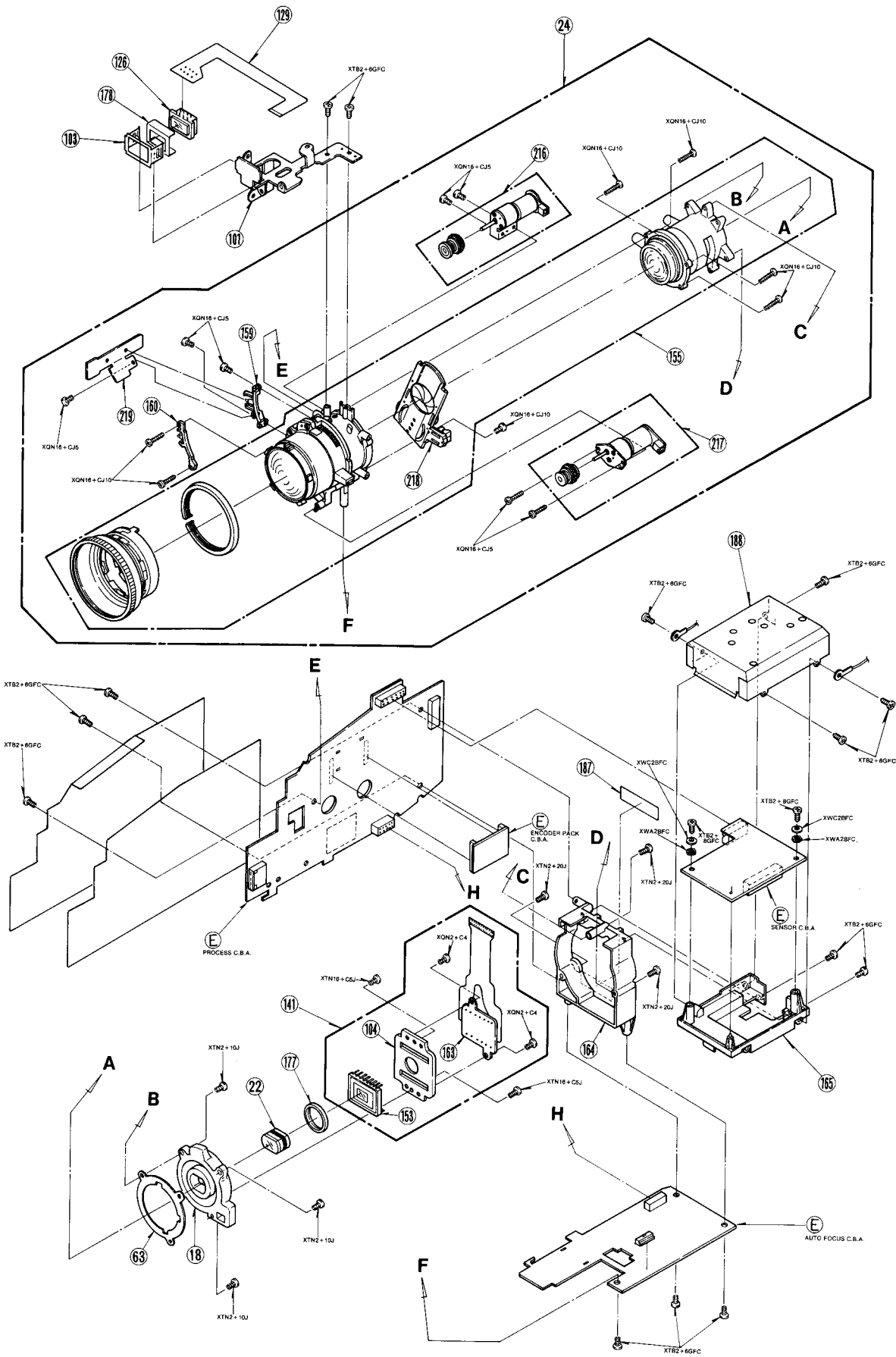
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### SERVO Section

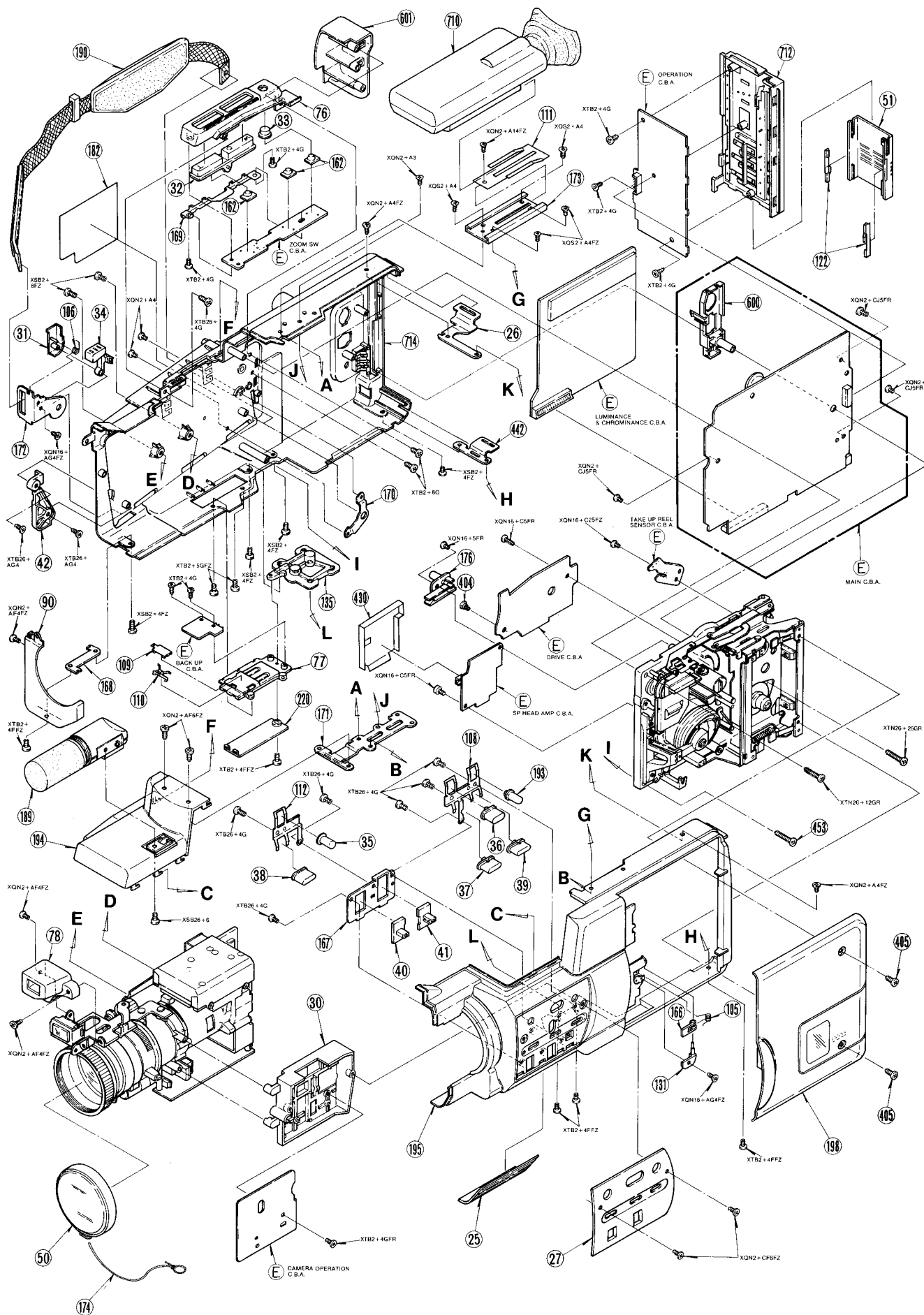
#### 4.1. EXPLODED VIEWS VTR MECHNISM SECITON



# **2 CAMERA LENS SECTION**

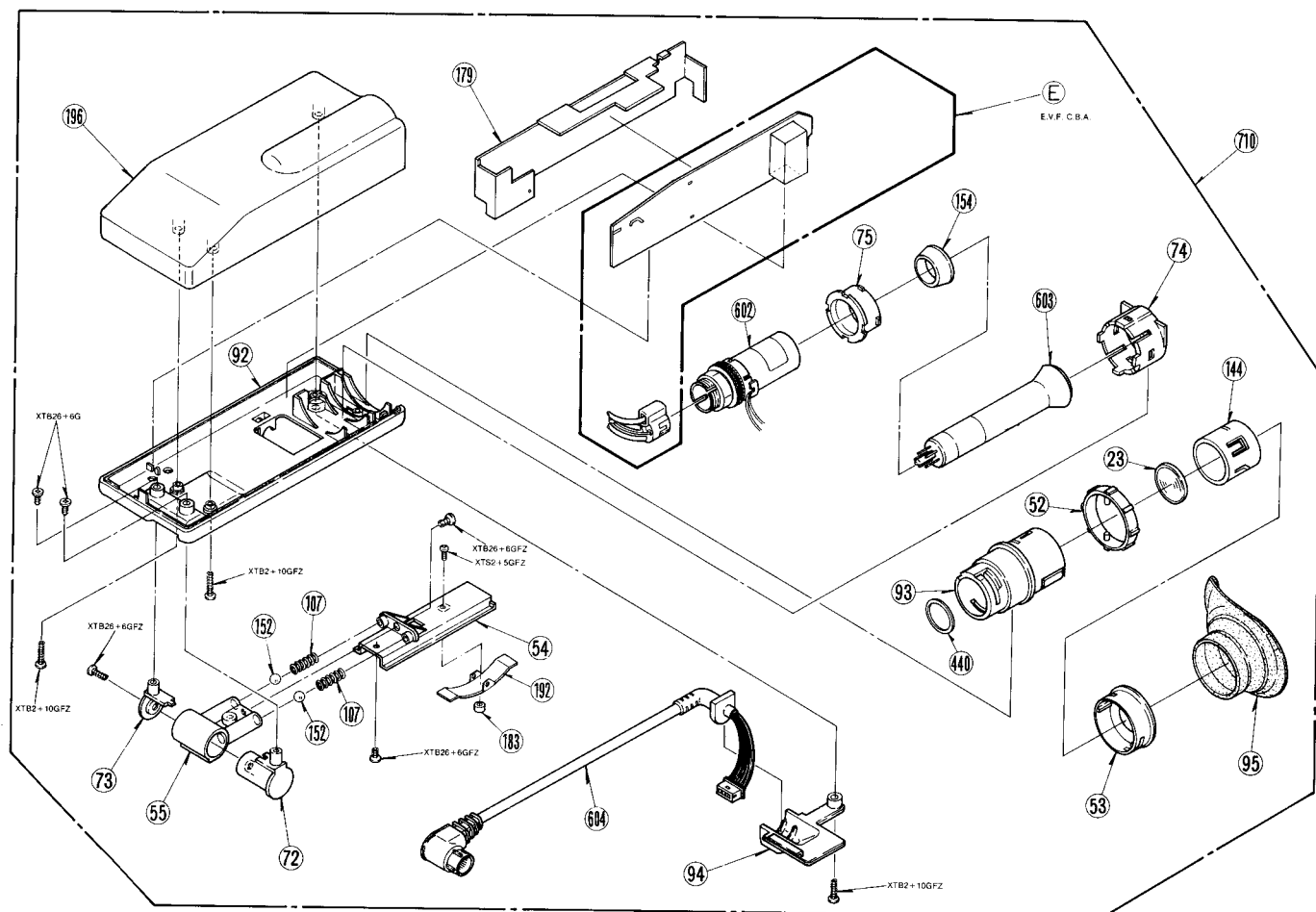


### ③ CHASSIS & FRAME SECTION

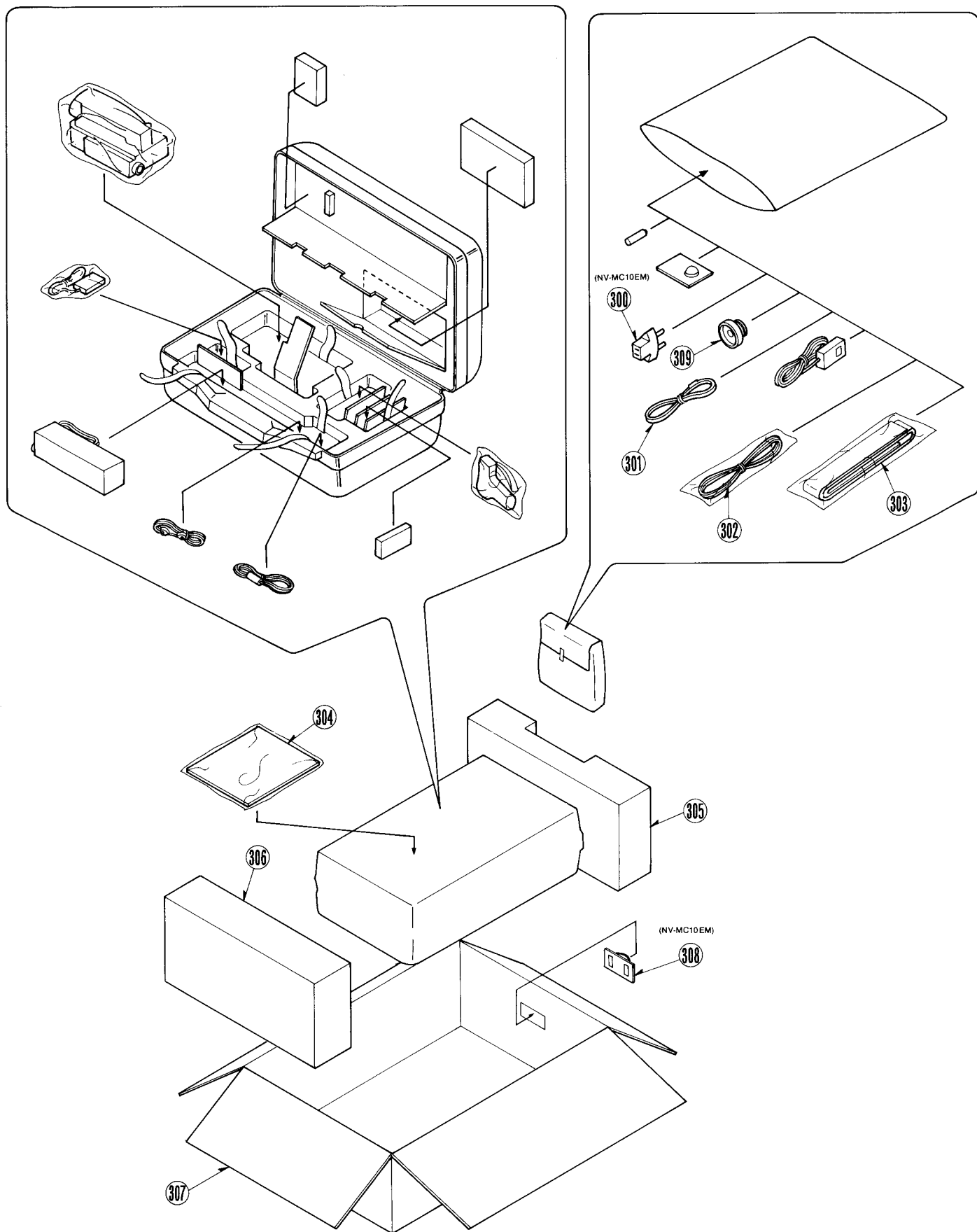




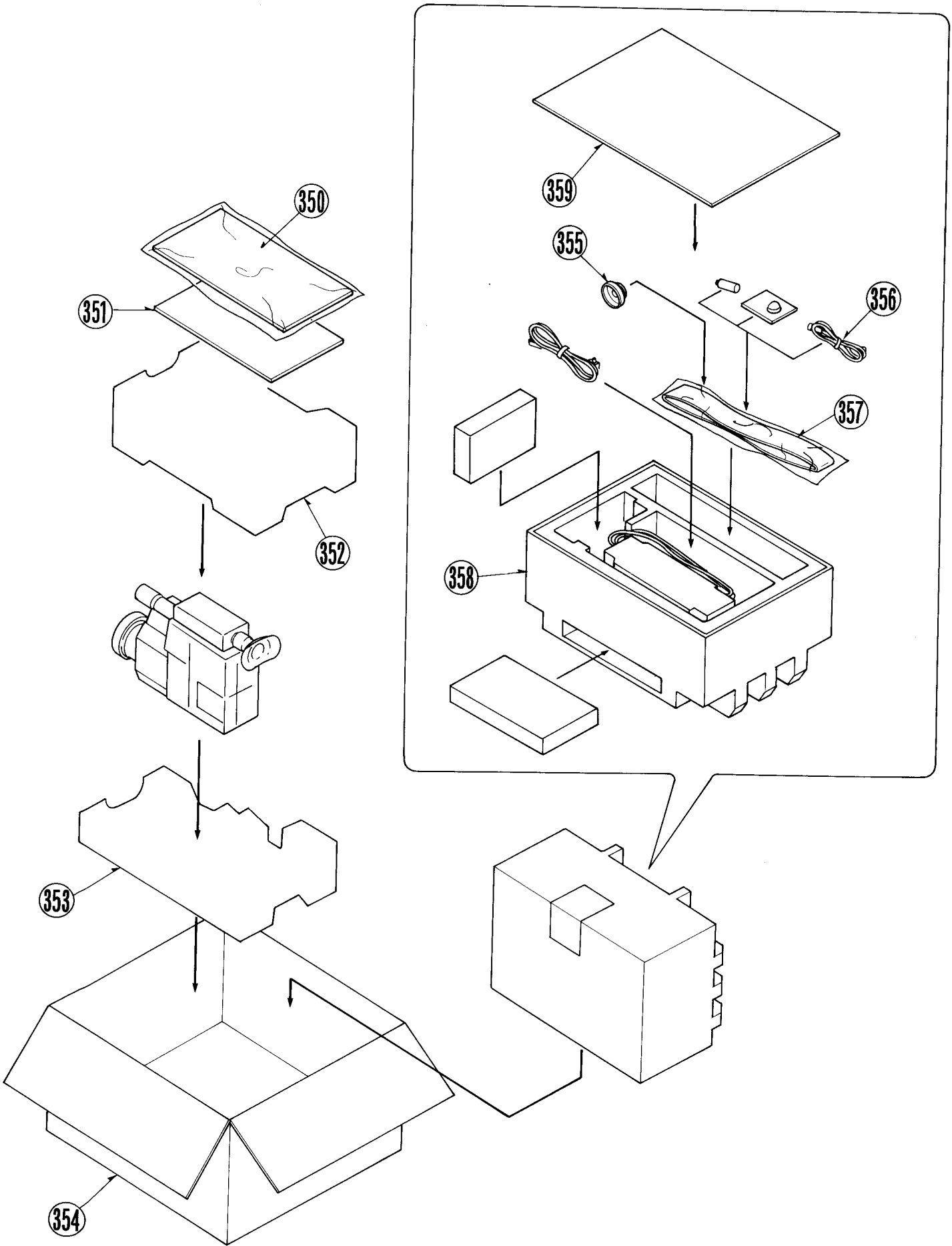
#### 4 E.V.F. SECTION



## 5 PACKING PARTS & ACCESSORIES SECTION (NV-MC10B/A/EM/EA/EP)



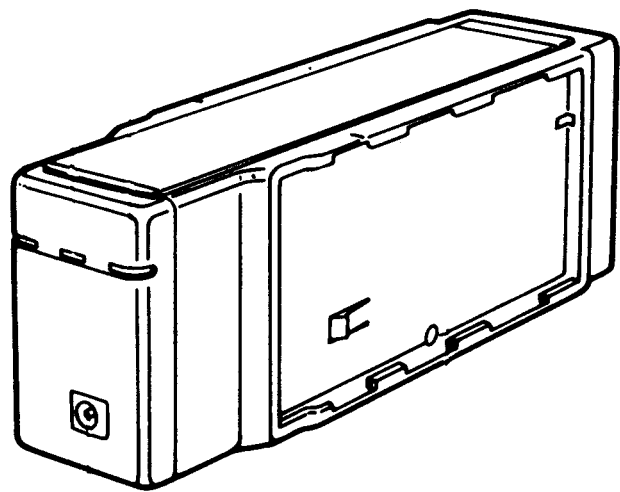
**⑥ PACKING PARTS & ACCESSORIES SECTION (NV-MC10EG/E/EN)**



AC Adaptor

VW-AMC1

EG/E  
B/A  
EN/EM  
EA/EP



ITEM	SPECIFICATION	ITEM	SPECIFICATION
POWER	SOURCE: 100~240 V AC 50/60 Hz (Automatic Voltage Adjustment)	DIMENSIONS	53(W) × 68.5(H) × 191(D) mm
	CONSUMPTION: 25 watts	WEIGHT	0.56 kg
	OUTPUT: DC 9.6 V, 1.0 A for VHS-C Movie DC 9.6 V, 0.86 A for battery charge		

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.

CAUTION: FOR USE WITH VHS-C VIDEO MOVIE, MODEL NV-MC10.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

CONTENTS

1. CONTROLS AND COMPONENTS ..... 1

2. DISASSEMBLY PROCEDURES..... 1

3. AC ADAPTOR BLOCK DIAGRAM..... 3

4. AC ADAPTOR SCHEMATIC DIAGRAM..... 4

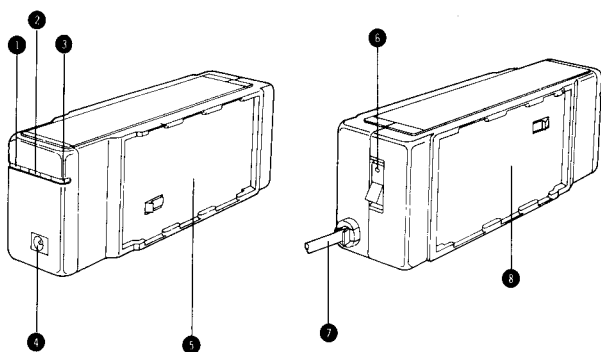
5. AC ADAPTOR CIRCUIT BOARDS..... 5

6. EXPLODED VIEWS ..... 6

    1. CASING & CHASSIS PARTS SECTION..... 6

    2. PACKING PARTS SECTION ..... 6

# 1. CONTROLS AND COMPONENTS



- ① Charge (1) Indicator Lamp
- ② Power Indicator Lamp
- ③ Charge (2) Indicator Lamp
- ④ DC Output Socket
- ⑤ Battery Holder (2)
- ⑥ Power Switch with Indicator Lamp
- ⑦ AC Mains Lead
- ⑧ Battery Holder (1)

# 2. DISASSEMBLY PROCEDURES

## 1.DISASSEMBLY FLOW CHART

This flow chart indicates the disassembly steps of the cabinet parts and the P.C. Boards in order to gain access to item(s) to be serviced. When re-assembling, perform the step(s) in the reverse order.

Note:  
When removing the Top Case Unit, work with care so as not to break the locking portions of the Top Case Unit.

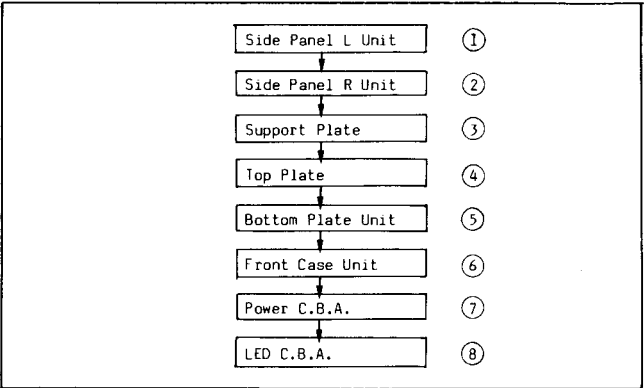


Fig. A1

## 2.DISASSEMBLY METHOD

Step /Loc No.	Part	REMOVAL		
		Fig. No.	Remove *UNLOCK/RELEASE/ UNPLUG/UNCLAMP	Note
①	Side Panel L Unit	D2	3(S-1), 2(S-2), 4(S-3), *2(L-1),	
②	Side Panel R Unit			
③	Support Plate	D2	-----	----
④	Top Plate	D3	*2(L-2)	----
⑤	Bottom Plate Unit	D3	-----	----
⑥	Front Case Unit	D4	*2(L-3), LED C.B.A.	----
⑦	Power C.B.A.	D3	-----	----
⑧	LED C.B.A.	D4	(L-4)	----

List of Abbreviations:

3(S-1) = 3 Screws (S-1)

2(L-1) = 2 Locking Tabs (L-1)

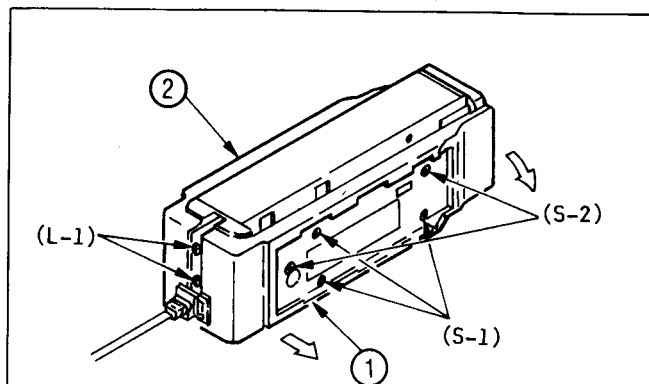


Fig. A2

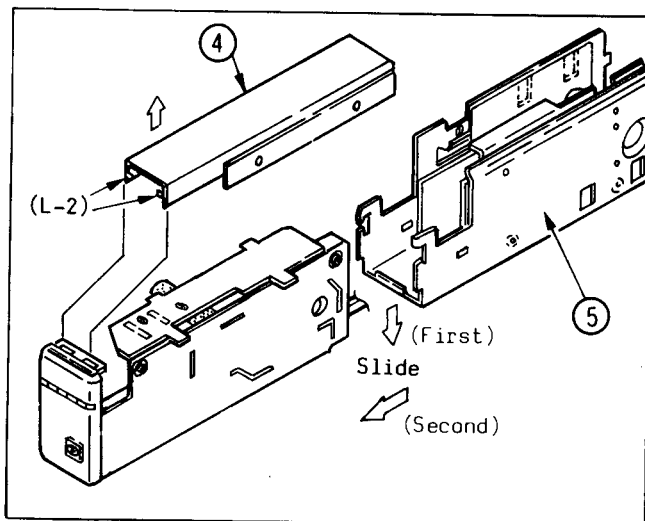


Fig. A3

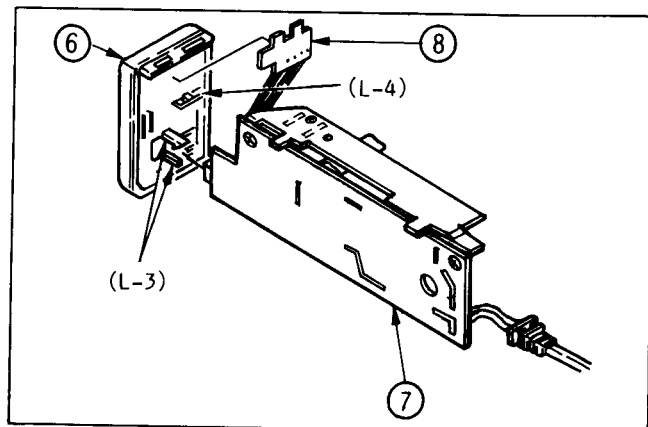
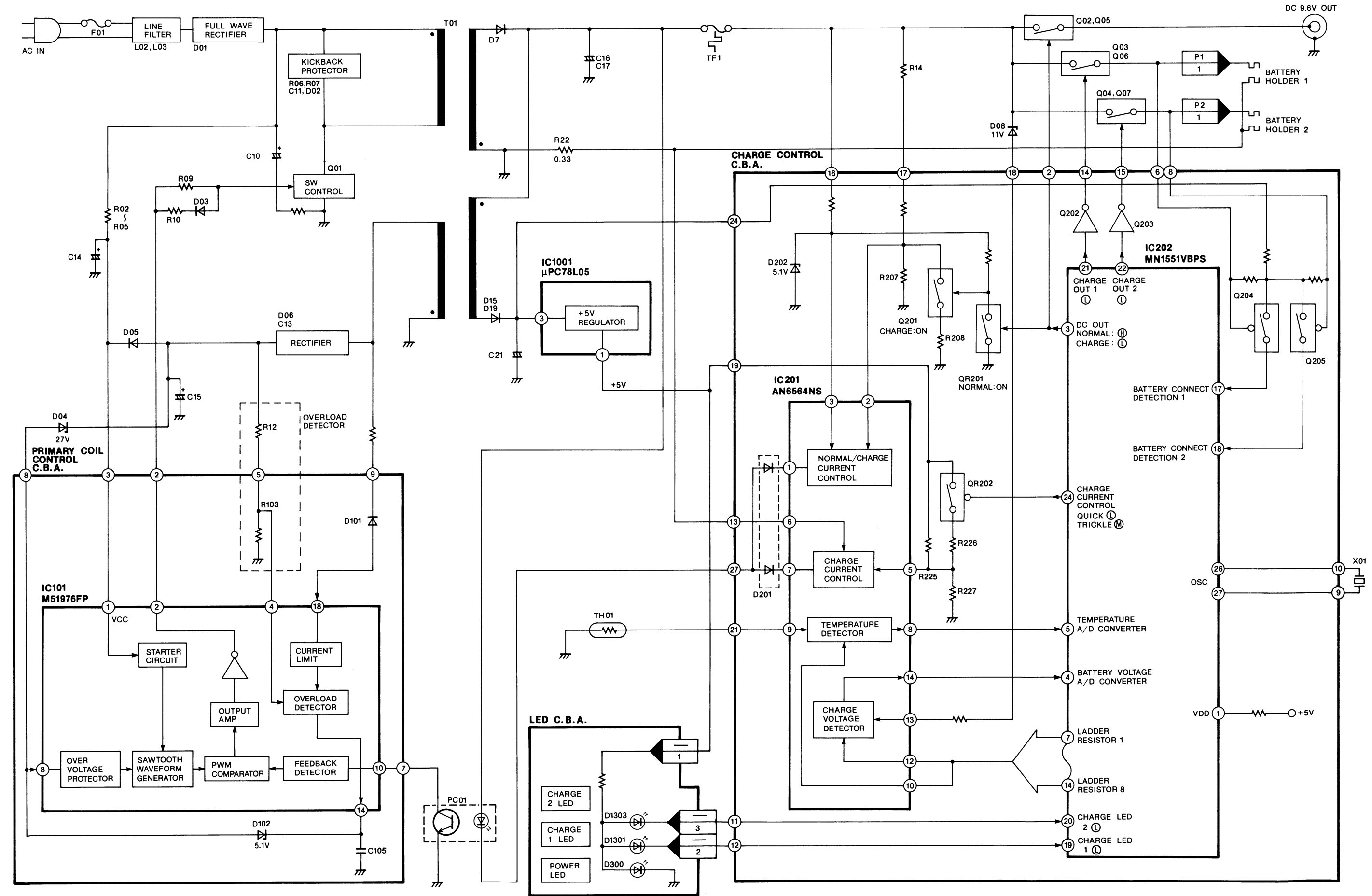


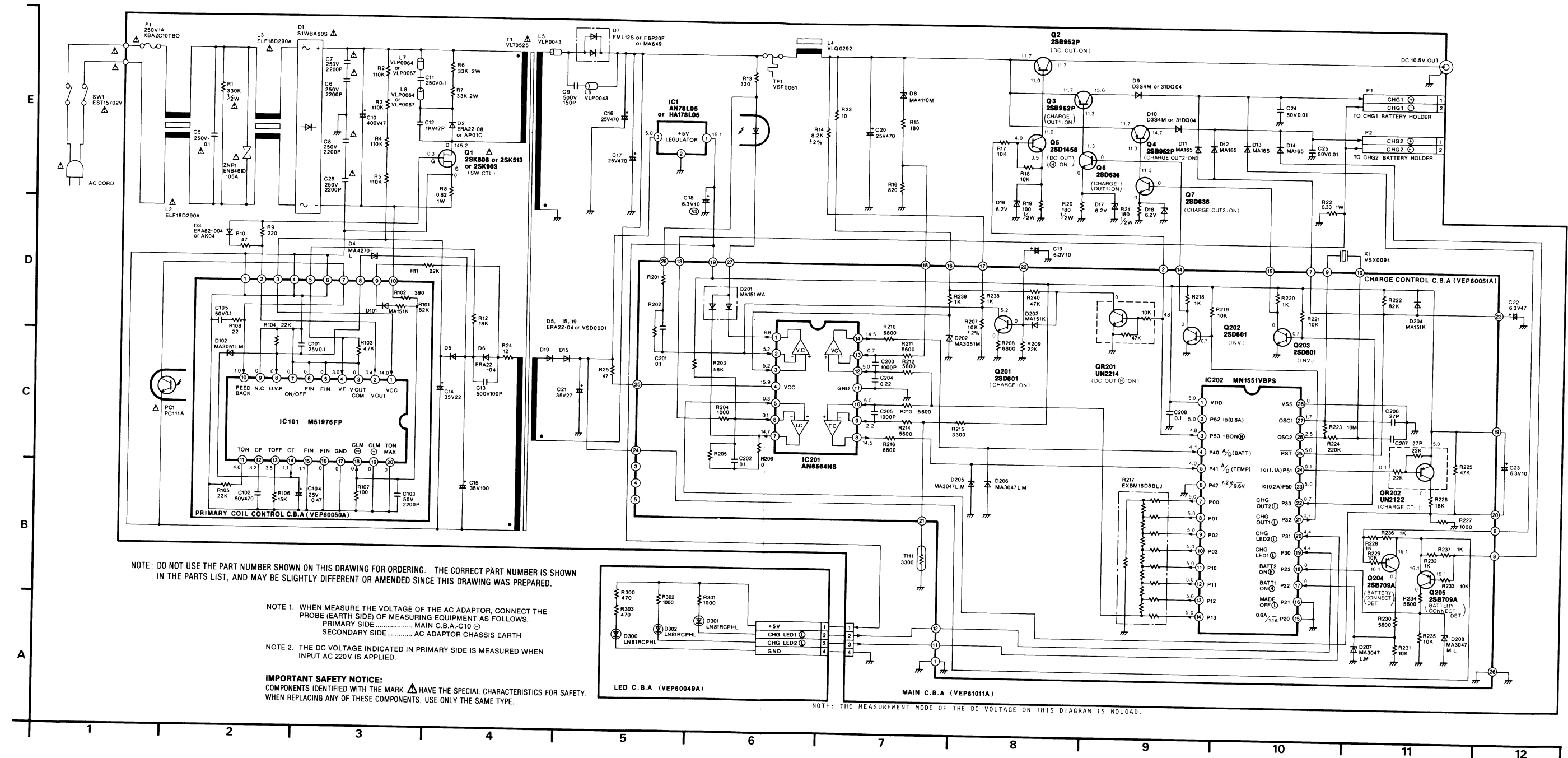
Fig. A4



3. AC ADAPTOR BLOCK DIAGRAM



#### 4. AC ADAPTOR SCHEMATIC DIAGRAM



LED C.B.A. (VEP60049A)

MAIN C.B.A. (VEP61011A)

CHARGE CONTROL C.B.A. (VEP60051A)

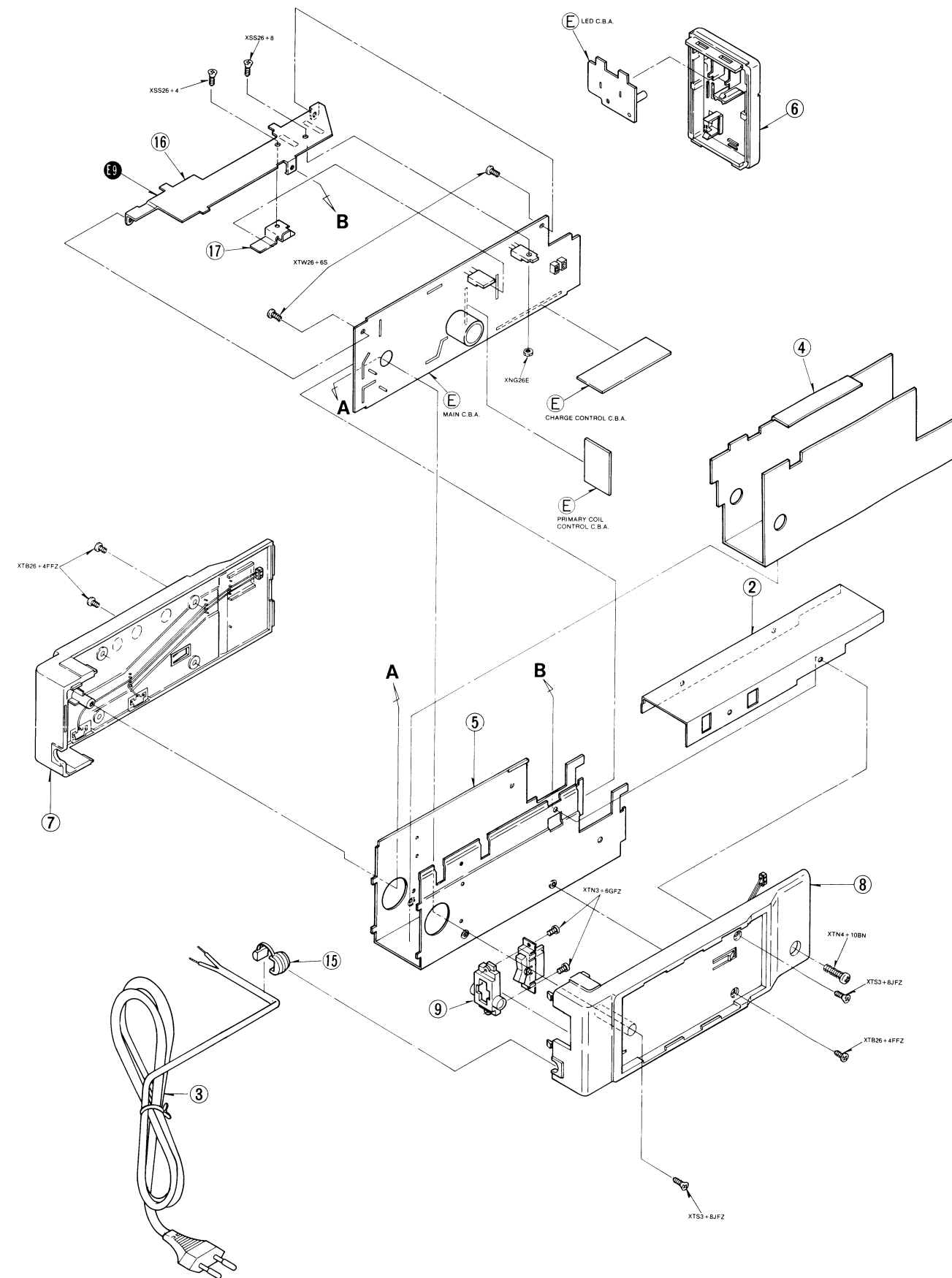
PRIMARY COIL CONTROL C.B.A. (VEP60050A)

(COMPONENT SIDE)

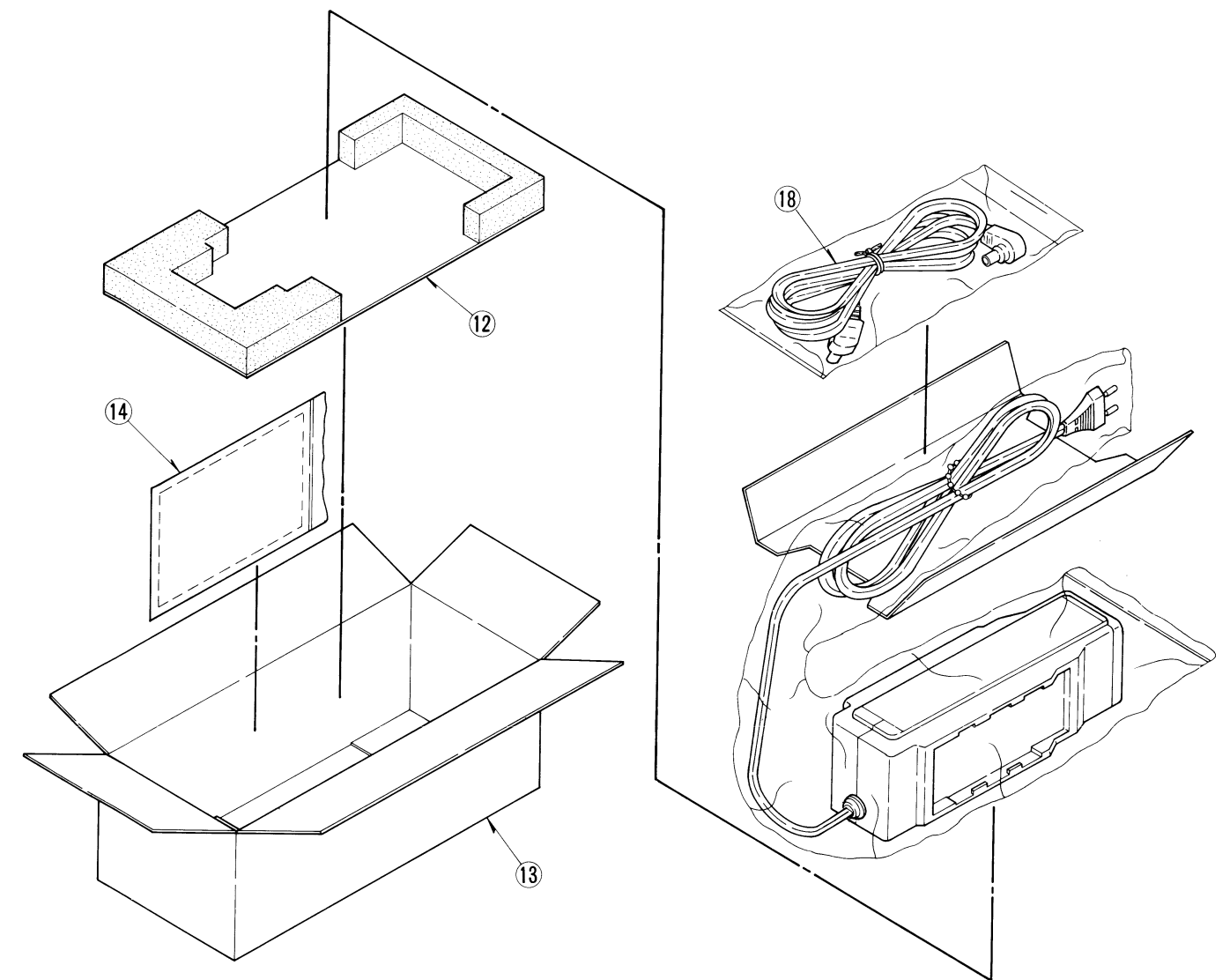
(FOIL SIDE)

## 6. EXPLODED VIEWS

### ❶ CASING & CHASSIS PARTS SECTION



## ② PACKING PARTS SECTION



# PARTS LIST

ORDER NO. VRD8709M153P

(Date of issue: SEP, 1987)

MODEL NO: NV-MC10E/EG/B/EP/A/EA/EN/EM, VW-AMC1E/B/A/EA/EN/EM

1.NV-MC10E/EG/B/EP/A/EA/EN/EM

## Mechanical Replacement Parts List

※ This parts list is detachable from the manual.

Note:1.\* Be sure to make your orders of replacement parts according to this list.  
2.IMPORTANT SAFETY NOTICE  
Components identified with the mark <I> have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
2(1)	VBS0042	FE HEAD	1	
3(1)	VDB0894	WORM BEARING METAL	1	
4(1)	VDG0407	TAKEUP REEL GEAR	1	
5(1)	VDG0408	RING GUIDE GEAR (S)	2	
6(1)	VDG0409	RING GUIDE GEAR (T)	2	
7(1)	VDG0410	LOADING GEAR S	1	
8(1)	VDG0411	LOADING GEAR T	1	
9(1)	VDG0412	TERMINAL GEAR	1	
10(1)	VDG0413	MOTOR GEAR	1	
11(1)	VDK0017	CONTROL CAM	1	
12(1)	VDP1146	S1 ROLLER	1	
13(1)	VDV0170	DRIVE BELT	1	
14(1)	VEE3722	DEW SENSOR UNIT	1	
15(1)	VEG0576	DD CYLINDER UNIT	1 <I>	
16(1)	VED0042	A/C HEAD UNIT	1	
17(1)	VEH0371	UPPER CYLINDER UNIT	1	
18(2)	VXQ0020	ACTUATOR UNIT	1	
19(1)	VEM0284	CAPSTAN MOTOR UNIT	1 <I>	
20(1)	VEM0292	LOADING MOTOR 1 UNIT	1 <I>	
21(1)	VES0416	MODE SELECT SW UNIT	1	
22(2)	VDL0143A	CRYSTAL FILTER UNIT	1	
23(4)	VDL0145	EVF LENS	1	
24(2)	VXW0001	LENS UNIT	1	
25(3)	VGQ1357	HAND PAD (R)	1	
26(3)	VMP1350	SHOULDER STRAP ANGLE	1	
		(UPPER)		
27(3)	VGP1726	CAMERA OPERATION PANEL	1	
28(1)	VMD1145	T3 POST CAP	1	
29(1)	VXS0077	EARTH BRUSH UNIT	1	
30(3)	VKM1077	CAMERA OPERATION BRACKET	1	
31(3)	VGQ1345	BATTERY FIXING HOLDER	1	
32(3)	VGU3926	ZOOM BUTTON	1	
33(3)	VGU3927	S/S BUTTON	1	
34(3)	VGU3928	BATTERY FIXING KNOB	1	
35(3)	VGU3932	REC. REVIEW BUTTON	1	
36(3)	VGU3933	BACK LIGHT BUTTON	1	
37(3)	VGU3936	HSS BUTTON	1	
38(3)	VGU3935	ZOOM FOCUS BUTTON	1	
39(3)	VGU3937	T/D BUTTON	1	
40(3)	VGU3939	AUTO/MANUAL KNOB	1	
41(3)	VGU3938	WHITE BALANCE KNOB	1	
42(3)	VKCO320	BATTERY FIXING HINGE	1	
43(1)	VMA7109	CASSETTE STAND (T)	1	
44(1)	VMA7112	MR SHIELD COVER	1	
45(1)	VMA7119	T1 SLIDE PLATE	1	
46(1)	VMA7120	LOADING MOTOR HOLDER	1	
47(1)	VMA7125	HOLDER STAY (R)	1	
48(1)	VMA7248	H.A PLATE	1	
49(1)	VMA7138	HOLDER STAY (F)	1	
50(3)	VKFO963	HOOD CAP	1	
51(3)	VKFO973	SLIDING LID	1	
52(4)	VGU3946	EYESIGHT CORRECTION RING	1	
53(4)	VJFO512	EYE CAP HOLDER	1	
54(4)	VGQ1347	EVF FOOT	1	
55(4)	VKCO323	ROTALY PIECE	1	
56(1)	VMB1705	CAM SPRING	1	
57(1)	VMB1774	PINCH ROLLER SPRING	1	
58(1)	VMB1707	TAPE GUIDE ARM SPRING	1	
59(1)	VMB1785	ERASE HEAD SPRING	1	
60(1)	VMB1710	SOFT BRAKE SPRING (1)	1	
61(1)	VMB1711	SOFT BRAKE SPRING (2)	1	
62(1)	VMB1786	TENSION SPRING	1	
63(2)	VMD1347	ACTUATOR FRAME	1	
64(1)	VMB1714	LOADING SPRING (S)	1	
65(1)	VMB1717	TAPE GUIDE LEVER SPRING 1	1	
66(1)	VMB1718	TAPE GUIDE LEVER SPRING 2	1	
67(1)	VMB1719	SPRING (T)	1	
68(1)	VMB1720	SPRING (S)	1	
69(1)	VMB1721	OPEN SLIDE LEVER SPRING	1	
70(1)	VMB1722	LOCK SPRING	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
71(1)	VMB1723	SAFETY SPRING (S)	2	
72(4)	VKCO321	ROTARY HOLDER (A)	1	
73(4)	VKCO322	ROTARY HOLDER (B)	1	
74(4)	VGFO244	CRT MASKING	1	
75(4)	VJFO513	CRT HOLDER	1	
76(3)	VKML070	ZOOM CASE	1	
77(3)	VKML071	BATTERY BRACKET	1	
78(3)	VKML152	AWT SENSOR CASE	1	
79(1)	VMD1071	LOADING GUIDE	1	
80(1)	VMD1072	RING GUIDE (1)	1	
81(1)	VMD1073	RING GUIDE (2)	1	
82(1)	VMD1074	RING GUIDE (3)	1	
83(1)	VMD1100	LOADING GUIDE (T)	1	
84(1)	VMD1077	LOADING GUIDE (S)	1	
85(1)	VMD1168	V STOPPER BASE	1	
86(1)	VMD1079	SUPPLY GUIDE PLATE	1	
87(1)	VMD1082	BAND ADJUSTMENT PIECE	1	
88(1)	VEK3446	END SENSOR UNIT	1	
89(1)	VMD1104	RING LIMITER	1	
90(3)	VKML153	LENS FRONT COVER	1	
91(1)	VMD1156	C. B. STOPPER	1	
92(4)	VKML079	EVF BOTTOM CASE	1	
93(4)	VKML080	EYESIGHT CORRECTION CASE	1	
94(4)	VJFO514	CABLE HOLDER	1	
95(4)	VMO0408	EYE CAP	1	
96(1)	VML2102	ERASE HEAD LEVER	1	
97(1)	VML2026	SOFT BRAKE ARM	1	
98(1)	VML2028	BAND ARM	1	
99(1)	VML2032	TAPE GUIDE LEVER 1	1	
100(1)	VML2040	OPEN LEVER	1	
101(2)	VMP1353	AWT SENSOR ANGLE	1	
102(1)	VXK0876	S1 COLLAR	1	
103(2)	VMP1105	AWT SENSOR HOOK	1	
104(2)	VMA7183	CCD PLATE	1	
105(3)	VMB1745	SAFETY LEVER SPRING	1	
106(3)	VMB1744	BATTERY FIXING SPRING	1	
107(4)	VMO0337	COIL SPRING	2	
108(3)	VMO0331	RETURN SPRING (A)	1	
109(3)	VMO0326	BATTERY TERMINAL BOARD (A)	1	
110(3)	VMO0327	BATTERY TERMINAL BOARD (B)	1	
111(3)	VMO0328	SHOE SPRING	1	
112(3)	VMO0346	RETURN SPRING (B)	1	
113(1)	VXA3052	LOADING GEAR BASE UNIT	1	
114(1)	VXA3033	CASSETTE SUPPORT PLATE UNIT	1	
115(1)	VXA3053	CASSETTE STAND S1 UNIT	1	
116(1)	VXA3037	LOADING RING (T) UNIT	1	
117(1)	VXA3061	LOADING RING S1 UNIT	1	
118(1)	TLN107A	SENSOR LED	1	
119(1)	VXA3062	SHAFT HOLDER T1 UNIT	1	
120(1)	VSC2212	LP, HA SHIELD CASE (UPPER)	1	
121(1)	VXA3064	SHAFT HOLDER S1 UNIT	1	
122(3)	VMO0335	SLIDING LID SPRING	2	
123(1)	VXA3041	A/C HEAD BASE UNIT	1	
124(1)	VXA3043	CASSETTE HOLDER UNIT	1	
125(1)	VXA3034	CASSETTE UP UNIT	1	
126(2)	VEK3435	AWT SENSOR UNIT	1	
127(1)	VXA2958	CATCH PLATE (S) UNIT	1	
128(1)	VXA2959	CATCH PLATE (T) UNIT	1	
129(2)	VWJ0308	AWT FLEXIBLE CABLE	1	
130(1)	VETO043	UPPER RT (R) UNIT	1	
131(3)	VMD1123	LEVER HOLDER	1	
132(1)	VXJ0063	T1 ROLLER POST UNIT	1	
133(1)	VXJ0062	S1-ROLLER POST UNIT	1	
134(1)	VXLI657	EJECT LEVER UNIT	1	
135(3)	VMD1122	TRIPOD FIXING BRACKET	1	
136(1)	VXLI670	SOFT BRAKE UNIT	1	
137(1)	VXLI658	TENSION ARM UNIT	1	
138(1)	VXLI674	PRESSURE LEVER UNIT	1	
139(1)	VXLI660	TAPE GUIDE ARM UNIT	1	
140(1)	VXLI675	TAPE GUIDE LEVER 2 UNIT	1	
141(2)	VEK3393	CCD UNIT	1	
142(1)	VXLI732	MAIN ARM (1) UNIT	1	
143(1)	VXLI676	OPEN SLIDE LEVER (1) UNIT	1	
144(4)	VJFO511	LENS HOLDER	1	
145(1)	VXPO905	WORM GEAR UNIT	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
146(1)	VXP0904	SECTOR GEAR UNIT	1	
147(1)	VXP0922	IDLER UNIT	1	
148(1)	VXP0890	CLUTCH GEAR (T) UNIT	1	
149(1)	VXP0891	DAMPER UNIT	1	
150(1)	VXR0169	SUPPLY REEL TABLE UNIT	1	
151(1)	VX20249	TENSION BAND UNIT	1	
152(4)	VMP1358	STEEL BALL	2	
153(2)	VN3745F	CCD	1	
154(4)	VMX1004	CRT RUBBER	1	
155(2)	VXW0019	LENS ASSEMBLY	1	
159(2)	VJF0518	ENCODER HOLDER (B)	1	
160(2)	VJF0517	ENCODER HOLDER (A)	1	
161(2)	VXA3245	PROCESS C.B.A. SHIELD CASE	1	
162(3)	VMG0358	ZOOM SW	1	
163(2)	VWJ0289	CCD FLEXIBLE CABLE UNIT	1	
164(2)	VJF0519	SENSOR FRAME	1	
165(2)	VMD1143	SENSOR C.B.A. FRAME	1	
166(3)	VML2063	SAFETY LEVER	1	
167(3)	VMP1354	KNOB ANGLE	1	
168(3)	VMP1356	LENS FRONT COVER ANGLE	1	
169(3)	VMP1347	ZOOM CASE ANGLE	1	
170(3)	VMP1351	GRIP BELT ANGLE (REAR)	1	
171(3)	VMP1352	EVF SHOE FIXING ANGLE	1	
172(3)	VMP1349	GRIP BELT ANGLE	1	
173(3)	VMP1348	EVF SHOE	1	
174(3)	VQJ1349	HOOD STRAP	1	
175(1)	VMD1132	LEAD CLUMPER	1	
176(3)	VMX1253	C.B. SPACER	1	
177(2)	VMX1276	CCD CUSHION	1	
178(2)	VGF0210	AWT COVER	1	
179(4)	VM21076	EVF BARRIER	1	
182(3)	VGH1401	BATTERY NAME PLATE	1	
183(4)	VMD1207	HOLDER	1	
184(1)	VET0049	UPPER RT (S) ARM UNIT	1	
187(2)	VSC2399	SENSOR FRAME SHIELD	1	
188(2)	VSC2155	SENSOR SHIELD	1	
189(3)	VEK3449	MIC UNIT	1	
190(3)	VYCO212	GRIP BELT UNIT	1	NV-MC10EG/B/E/EP/A/EA
190(3)	VYCO205	GRIP BELT UNIT	1	NV-MC10EN/EM
192(4)	VML2118	LEVER	1	
193(3)	VGU3934	FADE BUTTON	1	
194(3)	VKM1301	TOP CASE	1	
195(3)	VKM1106	SIDE CASE (R)	1	NV-MC10EN/EM
195(3)	VKM1105	SIDE CASE (R)	1	NV-MC10EG/B/E/EP/A/EA
196(4)	VKM1154	EVF TOP CASE	1	NV-MC10EG/E/EP/A/EA
196(4)	VYK2005	EVF TOP CASE	1	NV-MC10B
196(4)	VKM1318	EVF TOP CASE	1	NV-MC10EN/EM
198(3)	VGP1751	CASSETTE COVER	1	
216(2)	VEW0286	ZOOM MOTOR	1	
217(2)	VEW0285	AUTO FOCUS MOTOR	1	
218(2)	VXL1635	IRIS UNIT	1	
219(2)	VEP30038A	ENCODER C.B	1	
220(3)	VKF0957	BACKUP BATTERY LID	1	
227(1)	VMC0360	PRESSURE PLATE	1	
300(5)	VJSS0070	AC PLUG ADAPTOR	1	NV-MC10EM
301(5)	VFA0050	AV OUTPUT CABLE	1	NV-MC10B/EP
301(5)	VFA0049	AV OUTPUT CABLE	1	NV-MC10A/EA/EM
302(5)	VJA0376	DIN RF CABLE	1	NV-MC10B/EP/EN/A/EA /EM
303(5)	VFC0130	SHOULDER STRAP	1	NV-MC10B/EP/A/EA
303(5)	VFC0131	SHOULDER STRAP	1	NV-MC10EM
304(5)	VQT2557	OPERATING INSTRUCTIONS	1	NV-MC10B(ENGLISH)<!>
304(5)	VQT2430	OPERATING INSTRUCTIONS	1	NV-MC10EP(ENGLISH/ GERMAN/FRENCH)<!>
304(5)	VQT2432	OPERATING INSTRUCTIONS	1	NV-MC10EP(SPANISH/ ITALY/DATCH)<!>
304(5)	VQT2434	OPERATING INSTRUCTIONS	1	NV-MC10EN(ENGLISH/CHI CHINESE)<!>
304(5)	VQT2433	OPERATING INSTRUCTIONS	1	NV-MC10A(ENGLISH)<!>
304(5)	VQT2435	OPERATING INSTRUCTIONS	1	NV-MC10EA(ENGLISH)<!>
304(5)	VQT2436	OPERATING INSTRUCTIONS	1	NV-MC10EM(ENGLISH/ ALABIC)<!>
304(5)	VQT2437	OPERATING INSTRUCTIONS	1	NV-MC10EM(HINDY/URDU) <!>
305(5)	VFN1994	CUSHION (R)	1	NV-MC10B/EP/A/EA/EM

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
306(5)	VFN1995	CUSHION (L)	1	NV-MC10B/EP/A/EA/EM
307(5)	VPG3701	PACKING CASE	1	NV-MC10B
307(5)	VPG3787	PACKING CASE	1	NV-MC10EP
307(5)	VPG3705	PACKING CASE	1	NV-MC10EN
307(5)	VPG3704	PACKING CASE	1	NV-MC10A
307(5)	VPG3706	PACKING CASE	1	NV-MC10EA
308(5)	VFN1409	HANDLE	1	NV-MC10EM
309(5)	VW0069	HOOD	1	NV-MC10B/EP/EN/A/EA /EM
350(6)	VQT2430	OPERATING INSTRUCTIONS	1	NV-MC10E/EG(ENGLISH/ GERMAN/FRENCH)<!>
350(6)	VQT2431	OPERATING INSTRUCTIONS	1	NV-MC10E(SWEDISH/ DENISH/FINNISH)<!>
350(6)	VQT2432	OPERATING INSTRUCTIONS	1	NV-MC10E(SPANISH/ ITALY/DATCH)<!>
351(6)	VFN1998	TOP PAD	1	NV-MC10E/EG
352(6)	VFN1958	CUSHION (UPPER)	1	NV-MC10E/EG/EN
353(6)	VFN1959	CUSHION (LOWER)	1	NV-MC10E/EG/EN
354(6)	VPG3702	PACKING CASE	1	NV-MC10EG
354(6)	VPG3703	PACKING CASE	1	NV-MC10E
354(6)	VPG3707	PACKING CASE	1	NV-MC10EN
355(6)	VW0069	HOOD	1	NV-MC10E/EG/EN
356(6)	VFA0050	AV OUTPUT CABLE	1	NV-MC10E/EG
356(6)	VFA0049	AV OUTPUT CABLE	1	NV-MC10E
357(6)	VFC0130	SHOULDER STRAP	1	NV-MC10E/EG
357(6)	VFC0131	SHOULDER STRAP	1	NV-MC10EN
358(6)	VFN1996	ACCESSORIES BOX	1	NV-MC10E/EG/EN
359(6)	VFN1997	PAD (A)	1	NV-MC10E/EG/EN
360(6)	VFN2008	HANDLE	1	NV-MC10EN
400(1)	VMX1247	S1 LIMITER	2	
401(1)	VHD0288	P3 ADJUST SCREW	2	
402(1)	VMB1734	THRUST SPRING	1	
404(3)	VHD0363	SCREW	2	
405(3)	VHD0377	CASSETTE COVER SCREW	2	
407(1)	VMX1252	S1 SPACER	1	
412(1)	VDB0899	UNDER BEARING	1	
413(1)	VDB0898	UPPER BEARING	1	
414(1)	VXP0873	ROTOR UNIT	1	
418(1)	VEK3345	STATOR UNIT	1	
419(1)	VHD0390	SCREW	1	
422(1)	VEK3501	SAFETY TAB SW	1	
425(1)	VHD0389	SCREW	3	
427(1)	VMX1061	CUT WASHER (A)	12	
428(1)	VMX1042	CUT WASHER (B)	2	
430(3)	VSC2210	SP,HA SHIELD CASE (UPPER)	1	
432(1)	VMD1189	T3 POST BOTTOM	1	
440(4)	VMX1322	O RING	1	
441(1)	VMS3608	SPACER	1	
442(3)	VMP1355	SHOULDER STRAP ANGLE (LOWER)	1	
448(1)	VMB1716	T3 POST SPRING	1	
449(1)	VHD0392	SCREW	2	
451(1)	VMX1251	P1 SPACER	1	
452(1)	VH0065	T3 POST NUT	1	
453(3)	VHD0395	SCREW	1	
454(1)	VMD1103	CASSETTE DOWN C.B HOLDER	1	
469(1)	VMA7050	STATOR ARM (2)	1	
600(3)	VJF0509	JACK HOLDER	1	
601(3)	VKF0970	GRIP BELT ANGLE COVER	1	
602(4)	ELX07V552B	DY	1	<!>
603(4)	MO1JV47WB	CRT	1	<!>
604(4)	VEK3437	10P CABLE	1	
710(3)	VEK3425	EVF UNIT	1	NV-MC10EG/A/EA/E/EM
710(3)	VEK3452	EVF UNIT	1	NV-MC10B
710(3)	VEK3451	EVF UNIT	1	NV-MC10EN/EM
712(3)	VYK1733	VTR OPERATION CASE (1) UNIT	1	
714(3)	VYK1729	SIDE CASE (L) (1) UNIT	1	
		SERVICE FIXTURES		
	VHMB180H8PF	VHS-C ALIGNMENT TAPE (PAL)	1	
	VFK0326	HEX WRENCH SET	1	





## Electrical Replacement Parts List

Note: 1. \* Be sure to make your orders of replacement parts according to this list.  
2. IMPORTANT SAFETY NOTICE  
Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.  
3. Unless otherwise specified,  
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICRO-GRAMS (uf) P=pf.  
4. The P.C. Board units marked width "H" show below the main assembled parts.

[illegible][illegible]



Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C112	ECST1CY105Z	T. CAPACITOR 16V 1U	1	
C113	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C114	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C115	ECUM1H821KBV	CHIP 50V 820P	1	
C116	ECUM1H821KBV	CHIP 50V 820P	1	
C117	ECUM1H821KBV	CHIP 50V 820P	1	
C118	ECEA1AKK100	E. CAPACITOR 10V 10U	1	
C119	ECEA1ASN100	E. CAPACITOR 10V 10U	1	
C120	ECEA1ASN100	E. CAPACITOR 10V 10U	1	
C123	ECEA1CKS100	E. CAPACITOR 16V 10U	1	
C124	ECST1CY105Z	T. CAPACITOR 16V 1U	1	
C125	ECEA1CKS100	E. CAPACITOR 16V 10U	1	
C126	ECKF1H102KB	C. CAPACITOR 50V 1000P	1	
C301	ECUX1E104ZJCM	CHIP 25V 0.1U	1	
C302	ECUX1E105JCM	CHIP 25V 1U	1	
C303	ECSF1CE105	TANTALUM 16V 1U	1	
C304	ECEA1CKS100	E. CAPACITOR 16V 10U	1	
C305	ECEA1CSN4R7	E. CAPACITOR 16V 4.7U	1	
C306	ECEA1AKK100	E. CAPACITOR 10V 10U	1	
C307	ECEA1VSN2R2	E. CAPACITOR 35V 2.2U	1	
C308	ECUX1E102KBM	CHIP 25V 1000P	1	
C309	ECSF1CE106	TANTALUM 16V 10U	1	
C310	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C311	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C312	ECUM1H561JCV	CHIP 50V 560P	1	
C313	ECUM1C224ZFN	CHIP 16V 0.22U	1	
C314	ECUX1E103ZFM	CHIP 25V 0.01U	1	
C315	ECUM1C224ZFN	CHIP 16V 0.22U	1	
C316	ECEA1CKK100	E. CAPACITOR 16V 10U	1	
C319	ECUX1E473FN	CHIP 25V 0.047U	1	
C320	ECUX1E473FN	CHIP 25V 0.047U	1	
C321	ECUX1E103ZFM	CHIP 25V 0.01U	1	
C322	ECUX1E103ZFM	CHIP 25V 0.01U	1	
C323	ECUX1E473FN	CHIP 25V 0.047U	1	
C324	ECUX1E473FN	CHIP 25V 0.047U	1	
C325	ECUX1E103ZFM	CHIP 25V 0.01U	1	
C326	ECUM1C224ZFN	CHIP 16V 0.22U	1	
C327	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C328	ECUX1E473FN	CHIP 25V 0.047U	1	
C329	ECSF1AE226	T. CAPACITOR 10V 22U	1	
C330	ECSF1AE476	TANTALUM 6.3V 47U	1	
C331	ECUM1C224ZFN	CHIP 16V 0.22U	1	
C335	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C336	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C337	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C338	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C340	ECEA1CKS100	E. CAPACITOR 16V 10U	1	
C341	ECEA1EKS100I	E. CAPACITOR 25V 10U	1	
C342	ECSF1AE476	TANTALUM 10V 47U	1	
C344	ECSF1AE106	TANTALUM 10V 10U	1	
C345	ECST1CY105Z	T. CAPACITOR 16V 1U	1	
C346	ECUX1E331KBM	CHIP 25V 330P	1	
C347	ECEA1CU101	E. CAPACITOR 16V 100U	1	
C351	ECSF1AE106	TANTALUM 10V 10U	1	
C352	ECUX1E105JCM	CHIP 25V 1M	1	
C353	ECSF1AE106	TANTALUM 10V 10U	1	
C354	ECSF1CE106	TANTALUM 16V 10U	1	
C355	ECST1AY225Z	T. CAPACITOR 10V 2.2U	1	
C356	ECST1AY225Z	T. CAPACITOR 10V 2.2U	1	
C357	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C358	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C359	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C360	ECEA1JKS470	E. CAPACITOR 6.3V 47U	1	
C361	ECUX1E104ZFN	CHIP 25V 0.1U	1	
C362	ECUX1E101JCM	CHIP 25V 100P	1	
C363	ECUM1H151JCV	CHIP 50V 150P	1	
C370	ECUX1E102KBM	CHIP 25V 1000P	1	
C371	ECUX1E103ZFM	CHIP 25V 0.01U	1	
C372	ECUX1E103ZFM	CHIP 25V 0.01U	1	
C373	ECUX1E101JCM	CHIP 25V 100P	1	
C376	ECSF1AE685	T. CAPACITOR 10V 6.8U	1	
C377	ECSF1AE685	T. CAPACITOR 10V 6.8U	1	
C378	ECUX1E101JCM	CHIP 25V 100P	1	
C379	ECUX1E101JCM	CHIP 25V 100P	1	
C381	ECUX1E101JCM	CHIP 25V 100P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C382	ECUX1E101JCM	CHIP 25V 100P	1	
C383	ECUX1E101JCM	CHIP 25V 100P	1	
C384	ECUX1E104ZFN	CHIP 25V 0.1U	1	
		DIODES		
D101	MA713	DIODE	1	
D104	MA728	DIODE	1	
D105	MA713	DIODE	1	
D301	MA141WA	DIODE	1	
D302	MA3047M	DIODE	1	
D303	MA728	DIODE	1	
D304	MA141K	DIODE	1	
D305	MA141WK	DIODE	1	
D306	MA141K	DIODE	1	
D308	MA728	DIODE	1	
		FILTERS		
FL301	ELB5B009	FILTER	1	
FL303	ELB4A002	FILTER	1	
FL304	ELB4A002	FILTER	1	
FL305	VLFO610	FILTER	1	
FL306	ELB4E004	FILTER	1	
FL307	ELB4A003	FILTER	1	
FL309	ELB4B003	FILTER	1	
FL310	ELB4B001	FILTER	1	
FL311	ELB4B002	FILTER	1	
FP101	VJS2282	CONNECTOR	1	
		INTEGRATED CIRCUITS		
IC101	AN1324NS	IC	1	
IC102	AN1324NS	IC	1	
IC103	AN1358S	IC	1	
IC104	AN1358S	IC	1	
IC105	AN1358S	IC	1	
IC301	AN1358S	IC	1	
IC302	AN1358S	IC	1	
IC303	AN1358S	IC	1	
IC304	AN2153S	IC	1	
IC305	MN4052BS	IC	1	
IC306	AN1324NS	IC	1	
IC307	UPD9313GB	IC	1	
IC308	VCR0200	IC	1	
IC309	MCO8181A	IC	1	
IC310	VCR0199	IC	1	
		COILS		
L301	VLQ0163K150	COIL 15UH	1	
L302	VLQ0163K150	COIL 15UH	1	
L303	VLQ0163K150	COIL 15UH	1	
L304	VLQ0163K150	COIL 15UH	1	
L306	VLQ0163K330	COIL 33UH	1	
L308	VLQ0163K150	COIL 15UH	1	
L311	VLQ0163K150	COIL 15UH	1	
L312	VLQ0163K150	COIL 15UH	1	
L313	VLQ0163K150	COIL 15UH	1	
L315	VLQ0291	COIL	1	
		TRANSISTORS		
Q301	2SD1819	TRANSISTOR	1	
Q302	2SD1819	TRANSISTOR	1	
Q303	2SD1819	TRANSISTOR	1	
Q304	2SB1218	TRANSISTOR	1	
Q305	2SB1218	TRANSISTOR	1	
Q306	2SB1218	TRANSISTOR	1	
Q307	2SD1819	TRANSISTOR	1	
Q308	2SB1218	TRANSISTOR	1	
Q311	2SD1819	TRANSISTOR	1	
Q314	2SD1819	TRANSISTOR	1	
Q315	2SD1819	TRANSISTOR	1	
Q316	2SC3931	TRANSISTOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
Q318	2SB1218	TRANSISTOR	1	
Q319	2SB1219	TRANSISTOR	1	
Q320	2SD1819	TRANSISTOR	1	
Q321	2SD1819	TRANSISTOR	1	
Q322	2SB1219	TRANSISTOR	1	
Q323	2SD874	TRANSISTOR	1	
Q324	2SD1819	TRANSISTOR	1	
Q325	2SD1819	TRANSISTOR	1	
Q327	2SD1819	TRANSISTOR	1	
Q328	2SC3931	TRANSISTOR	1	
Q330	2SD1819	TRANSISTOR	1	
Q331	2SB970	TRANSISTOR	1	
Q332	2SD1819	TRANSISTOR	1	
Q339	2SD1819	TRANSISTOR	1	
Q340	2SK316	TRANSISTOR	1	
Q344	2SB1218	TRANSISTOR	1	
Q345	2SD1819	TRANSISTOR	1	
Q346	2SB1218	TRANSISTOR	1	
Q347	2SB1218	TRANSISTOR	1	
Q348	2SK316	TRANSISTOR	1	
Q350	2SB1218	TRANSISTOR	1	
Q351	2SD1819	TRANSISTOR	1	
Q353	2SC3931	TRANSISTOR	1	
QR302	UN5215	TRANSISTOR-RESISTOR	1	
		RESISTORS		
R101	ERJ3GEYJ561	CHIP 1/20W 560	1	
R102	ERJ3GEYJ561	CHIP 1/20W 560	1	
R103	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R104	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R105	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R107	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R109	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R110	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R111	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R112	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R113	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R114	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R116	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R117	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R118	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R119	ERJ3GEYJ822	CHIP 1/20W 8.2K	1	
R120	ERJ3GEYJ470	CHIP 1/20W 47	1	
R121	ERJ3GEYJ823	CHIP 1/20W 82K	1	
R122	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R123	ERJ3GEYJ123	CHIP 1/20W 12K	1	
R124	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R125	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R126	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R127	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R128	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R129	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R130	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R131	ERJ3GEYJ224	CHIP 1/20W 220K	1	
R132	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R133	ERJ3GEYJ224	CHIP 1/20W 220K	1	
R134	ERJ3GEYJ123	CHIP 1/20W 12K	1	
R143	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R144	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R145	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R146	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R147	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R148	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R149	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R150	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R151	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R152	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R153	ERJ3GEYJ000	CHIP 1/20W 0	1	
R154	ERJ3GEYJ393	CHIP 1/20W 39K	1	
R155	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R156	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R157	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R158	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R160	ERJ3GEYJ334	CHIP 1/20W 330K	1	
R161	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R162	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R198	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R302	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R304	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R306	ERJ3GEYJ823	CHIP 1/20W 82K	1	
R307	ERJ3GEYJ392	CHIP 1/20W 3.9K	1	
R308	ERJ3GEYJ274	CHIP 1/20W 270K	1	
R309	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R310	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R311	ERJ3GEYJ123	CHIP 1/20W 12K	1	
R312	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R313	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R314	ERJ3GEYJ823	CHIP 1/20W 82K	1	
R315	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R316	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R317	ERJ3GEYJ222	CHIP 1/20W 2.2K	1	
R318	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R319	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R320	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R321	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R322	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R323	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R324	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R325	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R326	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R327	ERJ3GEYJ154	CHIP 1/20W 150K	1	
R328	ERJ3GEYJ123	CHIP 1/20W 12K	1	
R329	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R330	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R331	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R332	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R333	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R334	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R335	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R336	ERJ3GEYJ822	CHIP 1/20W 8.2K	1	
R337	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R338	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R339	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R340	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R341	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R342	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R343	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R346	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R347	ERJ3GEYJ393	CHIP 1/20W 39K	1	
R348	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R349	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R350	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R351	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R352	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R353	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R354	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R355	ERJ3GEYJ224	CHIP 1/20W 220K	1	
R356	ERJ3GEYJ824	CHIP 1/20W 820K	1	
R357	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R358	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R359	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R362	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R363	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R366	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R367	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R368	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R371	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R372	ERJ6GEYK106	CHIP 1/16W 10M	1	
R373	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R374	ERJ3GEYJ274	CHIP 1/20W 270K	1	
R375	ERJ3GEYJ334	CHIP 1/20W 330K	1	
R376	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R377	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R378	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R379	ERJ3GEYJ334	CHIP 1/20W 330K	1	
R380	ERJ3GEYJ274	CHIP 1/20W 270K	1	
R381	ERJ3GEYJ563	CHIP 1/20W 56K	1	







Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
IC603	AN78N05	IC	1	
IC604	NJM4558M-P	IC	1	
IC605	AN6562S	IC	1	
IC606	NJM3415M	IC	1	
IC607	MN1280Q	IC	1	
		COILS		
L601	VLQ0300J560	COIL 56UH	1	
L602	VLQ0163K330	COIL 33UH	1	
L603	VLQEL05F101K	COIL 100UH	1	
		CONNECTORS		
B601	VJP2227	CONNECTOR	1	
P601	VJP1599T	CONNECTOR(MALE) 6P	1	
		TRANSISTORS		
Q601	2SD1819	TRANSISTOR	1	
Q602	2SD1819	TRANSISTOR	1	
Q603	2SB710	TRANSISTOR CHIP	1	
Q604	2SB1219	TRANSISTOR	1	
Q605	2SD1820	TRANSISTOR	1	
Q606	2SB1219	TRANSISTOR	1	
Q607	2SD1820	TRANSISTOR	1	
Q608	2SD1819	TRANSISTOR	1	
Q609	2SD1819	TRANSISTOR	1	
Q610	2SD1819	TRANSISTOR	1	
Q611	2SD1819	TRANSISTOR	1	
Q612	2SD1819	TRANSISTOR	1	
Q613	2SA1255	TRANSISTOR	1	
Q614	2SC3138	TRANSISTOR	1	
Q615	2SD1819	TRANSISTOR	1	
Q616	2SB1220	TRANSISTOR	1 (T,S)	
Q617	2SB1220	TRANSISTOR	1 (T,S)	
Q618	2SD1819	TRANSISTOR	1	
Q619	2SD1819	TRANSISTOR	1	
Q620	2SD1819	TRANSISTOR	1	
Q621	2SD1819	TRANSISTOR	1	
		RESISTORS		
R602	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R603	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R604	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R605	ERJ3GEYJ683	CHIP 1/20W 68K	1	
R606	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R607	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R608	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R609	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R610	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R611	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R612	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R613	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R614	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R615	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R616	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R617	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R618	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R619	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R620	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R621	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R622	ERJ3GEYJ271	CHIP 1/20W 270	1	
R623	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R624	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R625	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R626	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R627	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R628	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R629	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R630	ERJ3GEYJ751	CHIP 1/20W 750	1	
R631	ERJ3GEYJ331	CHIP 1/20W 330	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R632	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R633	ERJ3GEYJ224	CHIP 1/20W 220K	1	
R634	ERJ3GEYJ224	CHIP 1/20W 220K	1	
R635	ERJ3GEYJ224	CHIP 1/20W 220K	1	
R636	ERJ3GEYJ224	CHIP 1/20W 220K	1	
R637	ERJ3GEYJ394	CHIP 1/20W 390K	1	
R638	ERJ6GEYF333	CHIP 1/16W 33K	1	
R639	ERJ6GEYF473	CHIP 1/16W 47K	1	
R640	ERJ3GEYJ394	CHIP 1/20W 390K	1	
R641	ERJ6GEYF333	CHIP 1/16W 33K	1	
R642	ERJ6GEYF473	CHIP 1/16W 47K	1	
R643	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R644	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R645	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R646	ERJ3GEYJ224	CHIP 1/20W 220K	1	
R647	ERJ3GEYJ124	CHIP 1/20W 120K	1	
R648	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R649	ERJ3GEYJ123	CHIP 1/20W 12K	1	
R650	ERJ3GEYJ123	CHIP 1/20W 12K	1	
R651	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R652	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R653	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R654	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R655	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R656	ERJ3GEYJ220	CHIP 1/20W 22	1	
R657	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R658	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R659	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R660	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R661	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R662	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R663	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R664	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R665	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R666	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R667	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R668	ERJ3GEYJ222	CHIP 1/20W 2.2K	1	
R669	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R670	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R671	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R672	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R673	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R674	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R675	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R676	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R677	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R678	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R679	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R680	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R681	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R682	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R683	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R684	ERJ3GEYJ681	CHIP 1/20W 680	1	
R685	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R686	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R687	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R688	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R689	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R690	ERJ3GEYJ393	CHIP 1/20W 39K	1	
R691	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R692	ERJ3GEYJ100	CHIP 1/20W 10K	1	
R693	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R694	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R695	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R696	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R697	ERJ3GEYJ394	CHIP 1/20W 390K	1	
R698	ERJ3GEYJ474	CHIP 1/20W 470K	1	
R699	ERJ3GEYJ220	CHIP 1/20W 22	1	
R800	ERJ3GEYJ221	CHIP 1/20W 220	1	
R801	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R804	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R805	ERJ3GEYJ101	CHIP 1/20W 100	1	
		TRANSFORMER		



Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C1009	ECEA1EK4R7	E. CAPACITOR 25V 4.7U	1	
C1010	ECEA1EK4R7	E. CAPACITOR 25V 4.7U	1	
C1011	ECEA1ASJ101	E. CAPACITOR 10V 100U	1	
C1012	ECEA1ASJ101	E. CAPACITOR 10V 100U	1	
C1013	ECEA1AKA330	E. CAPACITOR 10V 33U	1	
C1014	ECEA1AKS330	E. CAPACITOR 10V 33U	1	
C1015	ECSE1EY474Z	T. CAPACITOR 25V 0.47U	1	
C1016	ECUX1E473FN	CHIP 25V 0.047U	1	
C1017	ECUX1E2232FN	CHIP 25V 0.022U	1	
C1018	ECUX1C1052F	CHIP 16V 1U	1	
C1019	ECUX1C1052F	CHIP 16V 1U	1	
C1020	ECUX1H471KBN	CHIP 50V 470P	1	
C1021	ECUX1H820JCM	CHIP 50V 82P	1	
C1022	ECUX1H560KBM	CHIP 50V 56P	1	
C1023	ECUX1C1052F	CHIP 16V 1U	1	
C1024	ECUX1E1042FN	CHIP 25V 0.1U	1	
C1025	ECUX1E473FN	CHIP 25V 0.047U	1	
C1026	ECUX1H472KBN	CHIP 50V 4700P	1	
C1027	ECUX1E1042FN	CHIP 25V 0.1U	1	
C1028	ECUM1H272KBN	CHIP 50V 2700U	1	
C1029	ECUX1H332KBN	CHIP 50V 3300P	1	
C1030	ECUX1C1052F	CHIP 16V 1U	1	
C1031	ECUX1C1052F	CHIP 16V 1U	1	
C1032	ECUX1C1052F	CHIP 16V 1U	1	
C1033	ECUX1C1052F	CHIP 16V 1U	1	
C1034	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C1035	ECEA1CKAJ101	E. CAPACITOR 6.3V 100U	1	
C2001	ECUM1H101JV	CHIP 50V 100P	1	
C2002	ECUM1H101JV	CHIP 50V 100P	1	
C2003	ECUX1E1032FM	CHIP 25V 0.01U	1	
C2004	ECUX1H4732FN	CHIP 50V 0.047U	1	
C2005	ECEA0JKS470	E. CAPACITOR 6.3V 47U	1	
C2006	ECEA0JKS470	E. CAPACITOR 6.3V 47U	1	
C2007	ECUX1H472KBN	CHIP 50V 4700P	1	
C2009	ECEA0JKS220	E. CAPACITOR 6.3V 22U	1	
C2010	ECEA0JKS220	E. CAPACITOR 6.3V 22U	1	
C2011	ECUX1H4732FN	CHIP 50V 0.047U	1	
C2012	ECUX1E102KBM	CHIP 25V 1K	1	
C2013	ECUX1H471KBN	CHIP 50V 470K	1	
C2014	ECEA1VSNZR2	E. CAPACITOR 35V 2.2U	1	
C2015	ECUX1C1052F	CHIP 16V 1U	1	
C2016	ECUX1C1052F	CHIP 16V 1U	1	
C2017	ECUX1E102KBM	CHIP 25V 1000P	1	
C2018	ECUX1E102KBM	CHIP 25V 1000P	1	
C2019	ECEA0JKS330	E. CAPACITOR 6.3V 33U	1	
C2020	ECUX1H820JCM	E. CAPACITOR 50V 82P	1	
C2021	ECUX1C1052F	E. CAPACITOR 16V 1U	1	
C2022	ECUX1C1052F	E. CAPACITOR 16V 1U	1	
C2023	ECUX1H332FN	CHIP 50V 0.033U	1	
C2024	ECEA1CKS100	E. CAPACITOR 16V 10U	1	
C2025	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C2026	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C2027	ECUX1H472KBM	E. CAPACITOR 50V 4700P	1	
C2028	ECUX1C1052F	E. CAPACITOR 16V 1U	1	
C2029	ECUX1E102KBM	E. CAPACITOR 25V 1000P	1	
C2030	ECUX1E1042FN	CHIP 25V 0.1U	1	
C2031	ECUM1C4742FM	CHIP 16V 0.47U	1	
C2032	ECUX1E1032FM	CHIP 25V 0.01U	1	
C2033	ECUX1C1052F	CHIP 16V 1U	1	
C2034	ECUM1H101JV	CHIP 50V 100P	1	
C2035	ECUX1E102KBM	CHIP 25V 1000P	1	
C2036	ECUX1C1052F	CHIP 16V 1U	1	
C2036	ECUX1E1042FN	CHIP 25V 0.1U	1	
C2037	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C2038	ECEA0JKS330	E. CAPACITOR 6.3V 33U	1	
C2039	ECEA0JKS330	E. CAPACITOR 6.3V 33U	1	
C2040	ECUX1H1032FN	CHIP 50V 0.01U	1	
C2041	ECUX1E1042FN	CHIP 25V 0.1U	1	
C2042	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C2043	ECUX1C1052F	CHIP 16V 1U	1	
C2044	ECUX1E1042FN	CHIP 25V 0.1U	1	
C2045	ECQX1H393JS	P. CAPACITOR 50V 0.039U	1	
C2046	ECUX1E1032FM	CHIP 25V 0.01U	1	
C2047	ECUX1C1052F	CHIP 16V 1U	1	
C2048	ECUX1E1051CM	CHIP 25V 1U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C2049	ECUX1E1051CM	CHIP 25V 1U	1	
C2050	ECUX1E1042FN	CHIP 25V 0.1U	1	
C2051	ECUM1C4742FM	CHIP 16V 0.047U	1	
C2052	ECUX1E1042FN	CHIP 25V 0.1U	1	
C2053	ECEA0JKS470	E. CAPACITOR 6.3V 47U	1	
C2054	ECEA0JKS470	E. CAPACITOR 6.3V 47U	1	
C3501	ECUX1C1052F	CHIP 16V 1U	1	
C3510	ECEA0JK221	E. CAPACITOR 6.3V 220U	1	
C3511	ECEA0JK221	E. CAPACITOR 6.3V 220U	1	
C3512	ECUX1E220JCM	CHIP 25V 22P	1	
C3514	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3515	ECEA1AKS470	E. CAPACITOR 10V 47U	1	
C3516	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3517	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3518	ECEA0JKS470	E. CAPACITOR 6.3V 47U	1	
C3519	ECUX1E1042FN	CHIP 25V 0.1U	1	
C3522	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3526	ECUX1E1042FN	CHIP 25V 0.1U	1	
C3527	ECUX1E1042FN	CHIP 25V 0.1U	1	
C3528	ECUX1E1042FN	CHIP 25V 0.1U	1	
C3530	ECQV1H104JZ	P. CAPACITOR 50V 0.1U	1	
C3531	ECUX1E1042FN	CHIP 25V 0.1U	1	
C3532	ECUX1E1051CM	CHIP 25V 1U	1	
C3533	ECQF1H150JC	C. CAPACITOR 50V 15P	1	
C3534	ECQV1H104JZ	P. CAPACITOR 50V 0.1U	1	
C4001	ECQP1562JZ	P. CAPACITOR 100V 5600P	1	
C4002	ECQB1H333JH	P. CAPACITOR 50V 0.033U	1	
C4003	ECUX1H153KBN	CHIP 50V 0.015U	1	
C4004	ECUX1H472KBM	CHIP 50V 4700P	1	
C4006	ECUX1E332KBM	CHIP 25V 3300P	1	
C4007	ECEA1HK1010	E. CAPACITOR 50V 1U	1	
C4008	ECUX1H332FN	CHIP 50V 0.033U	1	
C4009	ECEA0JKS330	E. CAPACITOR 6.3V 33U	1	
C4010	ECEA1HK010	E. CAPACITOR 50V 1U	1	
C4011	ECUX1H822KBN	CHIP 50V 8200P	1	
C4012	ECEA0JKS220	E. CAPACITOR 6.3V 22U	1	
C4013	ECEA1HK010	E. CAPACITOR 50V 1U	1	
C4014	ECUM1H271KBN	CHIP 50V 270P	1	
C4015	ECEA0JKS470	E. CAPACITOR 6.3V 47U	1	
C4016	ECEA1CKS470	E. CAPACITOR 16V 47U	1	
C4017	ECEA1CKS220	E. CAPACITOR 16V 22U	1	
C4018	ECEA0JKS330	E. CAPACITOR 6.3V 33U	1	
C4019	ECEA1HK010	E. CAPACITOR 50V 1U	1	
C4020	ECUX1H332FN	CHIP 50V 0.033U	1	
C4021	ECUX1H273KBN	CHIP 50V 0.027U	1	
C4024	ECEA0JKS220	E. CAPACITOR 6.3V 22U	1	
C4025	ECEA1CKS220	E. CAPACITOR 16V 22U	1	
C4026	ECEA0JKS220	E. CAPACITOR 6.3V 22U	1	
C4027	ECUX1H682KBN	CHIP 50V 6800P	1	
C4028	ECEA1CKS100	E. CAPACITOR 16V 10U	1	
C4029	ECUX1H153KBN	CHIP 50V 0.015U	1	
C4030	ECEA1AKS470	E. CAPACITOR 10V 47U	1	
C4031	ECUX1H1032FN	CHIP 50V 0.01U	1	
C4032	ECEA1HSN010	E. CAPACITOR 50V 1U	1	
C4033	ECEA1HK010	E. CAPACITOR 50V 1U	1	
C4034	ECEA0JKS101	E. CAPACITOR 6.3V 100U	1	
C4035	ECUX1H391KBM	CHIP 50V 390P	1	
C4036	ECEA0JKS101	E. CAPACITOR 6.3V 100U	1	
C4037	ECEA1EK4R7	E. CAPACITOR 25V 4.7U	1	
C4038	ECEA1AKS330	E. CAPACITOR 10V 33U	1	
C4039	ECUX1H472KBM	CHIP 50V 4700P	1	
C4040	ECUX1E151JVM	CHIP 25V 150P	1	
C6001	ECUX1E1032FM	CHIP 25V 0.01U	1	
C6002	ECEA0JKS470	E. CAPACITOR 6.3V 47U	1	
C6003	ECRJA030E12X	TRIMMER	1	
C6004	ECUX1E330JCM	CHIP 25V 33P	1	
C6005	ECUX1E1032FM	CHIP 25V 0.01U	1	
C6006	ECUX1E1032FM	CHIP 25V 0.01U	1	
C6007	ECUX1E1032FM	CHIP 25V 0.01U	1	
C6008	ECUX1E1042FN	CHIP 25V 0.1U	1	
C6009	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C6010	ECUX1E1032FM	CHIP 25V 0.01U	1	
C6011	ECEA1AKS220	E. CAPACITOR 10V 22U	1	
C6012	ECEA1AKS220	E. CAPACITOR 10V 22U	1	
C6013	ECEA1CKK100	E. CAPACITOR 16V 10U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C6014	ECUX1C1052F	CHIP 16V 1U	1						
C6015	ECUX1C1052F	CHIP 16V 1U	1						
C6016	ECUX1E220JCM	CHIP 25V 22P	1						
C6017	ECUX1E220JCM	CHIP 25V 22P	1				COILS		
C6018	ECUX1C1052F	CHIP 16V 1U	1		L1001	ELCO6D005	COIL 47UH	1	
C6019	ECEA1CK5470	E. CAPACITOR 16V 47U	1		L1002	ELCO8D038	COIL 180UH	1	
C6020	ECUX1E1042FN	CHIP 25V 0.1U	1		L1003	VLQ0129	COIL 300UH	1	
C6021	ECUX1E1042FN	CHIP 25V 0.1U	1		L1004	ELCO8D025	COIL 600UH	1	
C6022	ECUX1E1042FN	CHIP 25V 0.1U	1		L1005	ELCO6D013	COIL 33UH	1	
C6023	ECUX1E1042FN	CHIP 25V 0.1U	1		L1006	VLQEL05F390K	COIL 39UH	1	
C6024	ECQV1H104J2	P. CAPACITOR 50V 0.1U	1		L1008	ELEPG221KA	COIL 220UH	1	
C6901	ECUX1C1052F	CHIP 16V 1U	1		L1009	ELCO4D006	COIL 120UH	1	
C6902	ECUX1C1052F	CHIP 16V 1U	1		L1010	ELEPG221KA	COIL 220UH	1	
					L1011	VLQEL04F101K	COIL 100UH	1	
					L3501	VLQEL04F101K	COIL 100UH	1	
		DIODES			L3502	VLQEL04F101K	COIL 100UH	1	
D1001	MA701A	DIODE	1		L3503	VLQEL04F101K	COIL 100UH	1	
D1002	ERAB4-009	DIODE	1		L3504	VLQ0163K101	COIL 100UH	1	
D1003	MA3075H	DIODE	1		L3505	VLQEL04F101K	COIL 100UH	1	
D1004	MA141WA	DIODE	1		L3506	VLQEL05F101K	COIL 100UH	1	
D1005	MA141WA	DIODE	1		L4001	VLQEL05F101K	COIL 100UH	1	
D1006	ERB81-004	DIODE	1		L4002	ELTMR822JB	TRANSFORMER	1	
D1007	MA141A	DIODE	1		L4003	ELTMR153KB	TRANSFORMER	1	
D1008	MA141K	DIODE	1		L4004	VLQEL05F221K	COIL 220UH	1	
D1009	MA141A	DIODE	1		L6001	VLQ0163K390	COIL 39UH	1	
D1011	MA165	DIODE	1		L6002	VLQEL05F101K	COIL 100UH	1	
D2001	MA143	DIODE	1						
D2002	MA143	DIODE	1						
D2003	MA143	DIODE	1				CONNECTORS		
D2005	MA141WK	DIODE	1		P1002	VJS2137	CONNECTOR	1	
D2006	MA141WK	DIODE	1		P1011	VJP1597T	CONNECTOR (MALE)	1	
D2007	MA141WK	DIODE	1		P2001	VJS2247	CONNECTOR	1	
D2009	MA141K	DIODE	1		P3501	VJS2248	CONNECTOR	1	
D2011	MA165	DIODE	1		P3502	VJS2233	CONNECTOR	1	
D4001	MA141WK	DIODE	1		P3503	VJP2237	CONNECTOR (MALE)	1	
D4002	MA141K	DIODE	1		P3504	VJP2272	CONNECTOR (MALE)	1	
D4003	MA141WK	DIODE	1		P4001	VJP2261	CONNECTOR (MALE)	1	
D4004	MA141K	DIODE	1		P4002	VJP2265	CONNECTOR (MALE)	1	
D6001	MA121	DIODE	1		P6001	VJP2271	CONNECTOR (MALE)	1	
D6002	MA141WK	DIODE	1		P6002	VJP2262	CONNECTOR (MALE)	1	
D6003	MA121	DIODE	1		P6003	VJS2317	CONNECTOR	1	
D6004	MA141WA	DIODE	1		P6004	VJS2245	CONNECTOR	1	
D6010	MA141WA	DIODE	1		P6005	VJP2272	CONNECTOR (MALE)	1	
D6012	MA143	DIODE	1		P6006	VJP2271	CONNECTOR (MALE)	1	
D6013	MA141WA	DIODE	1		P6007	VJP2271	CONNECTOR (MALE)	1	
D6017	MA141K	DIODE	1		P6008	VJP2262	CONNECTOR (MALE)	1	
D6019	MA141K	DIODE	1		P6009	VJP2271	CONNECTOR (MALE)	1	
D6022	MA141A	DIODE	1		P6010	VJP2272	CONNECTOR (MALE)	1	
D6025	MA143	DIODE	1		P6011	VJP2262	CONNECTOR (MALE)	1	
D6026	MA165	DIODE	1						
D6027	MA165	DIODE	1				TRANSISTORS		
D6901	MA141WK	DIODE	1		Q1001	XN1501	TRANSISTOR	1	
D6902	MA141WK	DIODE	1		Q1002	2SB956	TRANSISTOR	1	
					Q1003	2SD1526	TRANSISTOR	1	
					Q1004	2SB956	TRANSISTOR	1	
		INTEGRATED CIRCUITS			Q1005	2SB956	TRANSISTOR	1	
IC1001	BA6149LS	IC	1		Q2001	2SD1819	TRANSISTOR	1 (Q,R)	
IC1002	UN102	IC	1		Q3501	2SB1218	TRANSISTOR	1	
IC1003	UPC358G2	IC	1		Q3502	2SB1218	TRANSISTOR	1	
IC1004	NJM2903M	IC	1		Q3507	2SB970	TRANSISTOR	1	
IC2001	MN67461VDJF	IC	1		Q3510	2SB1218	TRANSISTOR	1	
IC2002	AN3798S	IC	1		Q3511	XN4601	TRANSISTOR	1	
IC2005	MN1551VYJS	IC	1		Q3512	XN4601	TRANSISTOR	1	
IC3501	UPD4066BG	IC	1		Q3513	2SC3931	TRANSISTOR	1	
IC4001	UPC1513G	IC	1		Q3515	2SB970	TRANSISTOR	1	
IC4002	UPC2300G	IC	1		Q3516	2SB970	TRANSISTOR	1	
IC6001	UPD75108G706	IC	1		Q3517	2SD1819	TRANSISTOR	1 (Q,R)	
IC6002	NJM2903M	IC	1		Q3521	2SC3931	TRANSISTOR	1	
IC6003	UPD6105G102	IC	1		Q3523	2SD1819	TRANSISTOR	1 (Q,R)	
IC6004	S6700A	IC	1		Q4001	2SD1820	TRANSISTOR	1	
IC6005	M54543ASL	IC	1		Q4002	2SD1328	TRANSISTOR	1 (Q,R)	
IC6006	S81250HGRD	IC	1		Q4003	2SD1819	TRANSISTOR	1 (Q,R)	
IC6007	UPD4094BG	IC	1		Q4005	2SD1819	TRANSISTOR	1 (Q,R)	
					Q4006	2SB1219	TRANSISTOR	1 (Q,R)	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
Q4007	2SD1823	TRANSISTOR	1	
Q4009	2SD1819	TRANSISTOR	1 (Q,R)	
Q6001	XN1501	TRANSISTOR	1	
Q6003	2SD1819	TRANSISTOR	1 (Q,R)	
Q6004	2SB970	TRANSISTOR	1 (Q,R)	
Q6005	2SD1819	TRANSISTOR	1 (Q,R)	
		COMBINATION PARTS		
QR1001	UN5111	TRANSISTOR-RESISTOR	1	
QR1002	UN5111	TRANSISTOR-RESISTOR	1	
QR1003	UN5213	TRANSISTOR-RESISTOR	1	
QR1004	UN5213	TRANSISTOR-RESISTOR	1	
QR2001	XN4215	TRANSISTOR-RESISTOR	1	
QR2002	UN5113	TRANSISTOR-RESISTOR	1	
QR2003	UN5213	TRANSISTOR-RESISTOR	1	
QR2004	UN5117	TRANSISTOR-RESISTOR	1	
QR2005	UN5117	TRANSISTOR-RESISTOR	1	
QR3501	UN5213	TRANSISTOR-RESISTOR	1	
QR3502	UN5213	TRANSISTOR-RESISTOR	1	
QR3503	UN5212	TRANSISTOR-RESISTOR	1	
QR3504	UN5212	TRANSISTOR-RESISTOR	1	
QR3505	UN5112	TRANSISTOR-RESISTOR	1	
QR3507	UN5213	TRANSISTOR-RESISTOR	1	
QR4001	UN5116	TRANSISTOR-RESISTOR	1	
QR4002	UN5212	TRANSISTOR-RESISTOR	1	
QR6001	UN5213	TRANSISTOR-RESISTOR	1	
QR6002	UN5213	TRANSISTOR-RESISTOR	1	
QR6004	UN5214	TRANSISTOR-RESISTOR	1	
QR6005	UN5113	TRANSISTOR-RESISTOR	1	
QR6006	UN5115	TRANSISTOR-RESISTOR	1	
QR6007	UN5213	TRANSISTOR-RESISTOR	1	
QR6008	UN5213	TRANSISTOR-RESISTOR	1	
QR6009	XN4316	TRANSISTOR-RESISTOR	1	
QR6011	UN5217	TRANSISTOR-RESISTOR	1	
QR6013	UN5217	TRANSISTOR-RESISTOR	1	
QR6014	UN521E	TRANSISTOR-RESISTOR	1	
QR6015	UN5112	TRANSISTOR-RESISTOR	1	
QR6016	UN5212	TRANSISTOR-RESISTOR	1	
QR6018	XN1213	TRANSISTOR-RESISTOR	1	
QR6020	UN5217	TRANSISTOR-RESISTOR	1	
QR6021	UN5214	TRANSISTOR-RESISTOR	1	
QR6022	UN5213	TRANSISTOR-RESISTOR	1	
QR6901	UN2114	TRANSISTOR-RESISTOR	1	
		RESISTORS		
R1001	ERJ3GEYJ222	CHIP 1/20W 2.2K	1	
R1002	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R1003	ERJ3GEYJ334	CHIP 1/20W 330K	1	
R1004	ERJ3GEYJ154	CHIP 1/20W 150K	1	
R1005	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R1006	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R1007	ERJ3GEYJ391	CHIP 1/20W 390	1	
R1008	ERJ8GCVJ821	CHIP 1/8W 820	1	
R1009	ERJ3GEYJ391	CHIP 1/20W 390	1	
R1010	ERJ8GCVJ821	CHIP 1/8W 820	1	
R1011	ERJ3GEYJ391	CHIP 1/20W 390	1	
R1012	ERJ8GCVJ821	CHIP 1/8W 820	1	
R1013	ERJ3GEYJ391	CHIP 1/20W 390	1	
R1014	ERJ8GCVJ681	CHIP 1/8W 680	1	
R1015	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R1016	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R1017	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R1018	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R1019	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R1020	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R1021	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R1022	ERJ3GEYJ821	CHIP 1/20W 820K	1	
R1023	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R1024	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R1025	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R1026	ERJ3GEYJ682	CHIP 1/20W 68K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R1027	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R1028	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R1029	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R1030	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R1031	ERJ3GEYJ330	CHIP 1/20W 33	1	
R1032	ERJ3GEYJ821	CHIP 1/20W 820	1	
R1034	ERJ8GCVJ560	CHIP 1/8W 56	1	
R1035	ERJ3GEYJ753	CHIP 1/20W 75K	1	
R1036	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R1037	VSP0059	FUSE	1	
R1038	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R1039	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R1040	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R1041	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R2001	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R2002	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R2003	ERJ3GEYJ392	CHIP 1/20W 3.9K	1	
R2004	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R2005	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R2006	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R2007	ERJ3GEYJ154	CHIP 1/20W 150K	1	
R2008	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2009	ERJ3GEYJ154	CHIP 1/20W 150K	1	
R2010	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R2011	ERJ3GEYJ683	CHIP 1/20W 68K	1	
R2012	ERJ3GEYJ334	CHIP 1/20W 330K	1	
R2013	ERJ3GEYJ154	CHIP 1/20W 150K	1	
R2014	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R2015	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R2016	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2017	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R2018	ERJ3GEYJ471	CHIP 1/20W 470	1	
R2019	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R2020	ERJ3GEYJ222	CHIP 1/20W 2.2K	1	
R2021	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2022	ERJ3GEYJ271	CHIP 1/20W 270	1	
R2023	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2024	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R2025	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R2026	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2028	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R2029	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R2030	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R2031	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R2032	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R2033	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R2034	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2035	ERJ3GEYJ154	CHIP 1/20W 150K	1	
R2036	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2037	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R2038	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R2039	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R2040	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2041	ERJ3GEYJ334	CHIP 1/20W 330K	1	
R2042	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R2043	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R2044	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2045	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2046	ERJ3GEYOR00	CHIP 1/20W 0	1	
R2047	ERJ3GEYJ471	CHIP 1/20W 470K	1	
R2048	ERJ3GEYJ221	CHIP 1/20W 220K	1	
R2049	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R2050	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R2051	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R2052	ERJ3GEYJ392	CHIP 1/20W 3.9K	1	
R2053	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R2054	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R2055	ERJ3GEYJ184	CHIP 1/20W 180K	1	
R2056	ERJ3GEYJ221	CHIP 1/20W 220K	1	
R2057	ERDS2TJ105	C.RESISTOR 1/4W 1000K	1	
R3501	ERJ3GEYJ392	CHIP 1/20W 3.9K	1	
R3502	ERJ3GEYJ392	CHIP 1/20W 3.9K	1	
R3503	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R3517	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R3518	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3519	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R3520	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R3521	ERJ3GEYJ821	CHIP 1/20W 820	1	
R3522	ERJ3GEYJ821	CHIP 1/20W 820	1	
R3526	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3527	ERJ3GEYOR00	CHIP 1/20W 0	1	
R3528	ERJ3GEYJ560	CHIP 1/20W 56	1	
R3529	ERJ3GEYJ220	CHIP 1/20W 22	1	
R3530	ERJ3GEYJ821	CHIP 1/20W 820	1	
R3531	ERJ3GEYJ821	CHIP 1/20W 820	1	
R3532	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R3533	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R3534	ERJ3GEYJ681	CHIP 1/20W 680	1	
R3535	ERJ3GEYJ391	CHIP 1/20W 390	1	
R3536	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R3537	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3542	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R3543	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R3544	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R3545	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R3546	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3547	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3548	ERJ3GEYJ331	CHIP 1/20W 330	1	
R3549	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R3552	ERJ3GEYJ821	CHIP 1/20W 820	1	
R3559	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3563	ERJ3GEYOR00	CHIP 1/20W 0	1	
R3564	ERJ3GEYJ393	CHIP 1/20W 39K	1	
R3565	ERJ3GEYJ393	CHIP 1/20W 39K	1	
R3566	ERJ3GEYJ154	CHIP 1/20W 150K	1	
R4001	ERJ3GEYJ100	CHIP 1/20W 10	1	
R4002	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R4003	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R4004	ERJ3GEYJ183	CHIP 1/20W 18K	1	
R4005	ERJ3GEYJ151	CHIP 1/20W 150	1	
R4006	ERJ3GEYJ184	CHIP 1/20W 180K	1	
R4007	ERJ3GEYJ332	CHIP 1/20W 3.3K	1	
R4008	ERJ3GEYJ181	CHIP 1/20W 180	1	
R4009	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R4010	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R4012	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R4013	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R4014	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R4015	ERJ3GEYJ100	CHIP 1/20W 10	1	
R4016	ERJ3GEYJ181	CHIP 1/20W 180	1	
R4017	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R4018	ERJ3GEYJ105	CHIP 1/20W 1M	1	
R4025	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R4026	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R4027	ERJ3GEYJ561	CHIP 1/20W 560	1	
R4028	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R4029	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R4032	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R4033	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R4035	ERJ3GEYJ101	CHIP 1/20W 100	1	
R4036	ERJ3GEYJ154	CHIP 1/20W 150K	1	
R4037	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R4038	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R4039	ERJ3GEYJ393	CHIP 1/20W 39K	1	
R4040	ERJ3GEYJ681	CHIP 1/20W 680	1	
R4041	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R4042	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R4043	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R4044	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R4045	ERJ3GEYJ224	CHIP 1/20W 220K	1	
R4046	ERJ3GEYJ184	CHIP 1/20W 180K	1	
R4047	ERJ3GEYJ123	CHIP 1/20W 12K	1	
R4048	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R4049	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R4050	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R4051	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R6001	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R6002	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R6003	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6004	ERJ3GEYJ103	CHIP 1/20W 10K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R6005	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R6006	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R6007	ERJ3GEYJ124	CHIP 1/20W 120K	1	
R6008	ERJ3GEYJ334	CHIP 1/20W 330K	1	
R6009	ERJ3GEYJ823	CHIP 1/20W 82K	1	
R6010	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R6011	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R6012	ERJ3GEYJ823	CHIP 1/20W 82K	1	
R6013	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R6014	ERJ3GEYJ681	CHIP 1/20W 680	1	
R6015	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R6016	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R6017	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R6018	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R6020	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R6021	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6022	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6023	ERJ3GEYJ101	CHIP 1/20W 100	1	
R6024	ERJ3GEYJ101	CHIP 1/20W 100	1	
R6025	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R6026	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R6027	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6028	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6029	ERJ3GEYJ394	CHIP 1/20W 390K	1	
R6030	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R6031	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6032	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6033	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6034	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6035	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6036	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6037	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R6038	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R6039	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R6040	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R6041	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R6042	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R6043	ERJ3GEYJ683	CHIP 1/20W 68K	1	
R6044	ERJ3GEYJ683	CHIP 1/20W 68K	1	
R6045	ERJ3GEYJ391	CHIP 1/20W 390	1	
R6046	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6047	ERJ3GEYJ683	CHIP 1/20W 68K	1	
R6048	ERJ3GEYJ184	CHIP 1/20W 180K	1	
R6049	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6050	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6051	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6052	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R6053	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R6054	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R6055	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R6056	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R6057	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R6058	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R6059	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R6060	ERJ3GEYJ100	CHIP 1/20W 10	1	
R6061	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R6062	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R6063	ERJ3GEYJ822	CHIP 1/20W 8.2K	1	
R6064	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R6065	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R6066	ERJ3GEYJ104	CHIP 1/20W 100K	1	
R6067	ERJ3GEYJ331	CHIP 1/20W 330	1	
R6068	ERJ3GEYJ392	CHIP 1/20W 3.9K	1	
R6069	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R6070	ERJ3GEYJ123	CHIP 1/20W 12K	1	
R6071	ERJ3GEYJ184	CHIP 1/20W 180K	1	
R6073	ERJ3GEYJ154	CHIP 1/20W 150K	1	
R6074	ERJ3GEYJ473	CHIP 1/20W 470K	1	
R6075	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6076	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R6077	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R6078	ERJ3GEYJ393	CHIP 1/20W 39K	1	
R6079	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R6080	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	
R6081	ERDS2TJ102	C.RESISTOR 1/4W 1K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R6082	ERDS2TJ223	C.RESISTOR 1/4W 22K	1	
		SWITCHES		
SW6001	EVQQFQ02K	SWITCH	1	
SW6002	EVQQFQ02K	SWITCH	1	
		TRANSFORMERS		
T1001	ELL10R006	TRANSFORMER	1	
T4001	EIQ7QF015Q	TRANSFORMER	1	
T4002	EIQ5QT003Q	TRANSFORMER	1	
		VARIABLE RESISTORS		
VR1001	EVM7NSX00B53	V.RESISTOR 5K	1	
VR1002	EVM7NSX00B53	V.RESISTOR 5K	1	
VR1003	EVM7NSX00B53	V.RESISTOR 5K	1	
VR2001	EVM7NSX00B15	V.RESISTOR 100K	1	
VR4001	EVM7NSW00B23	V.RESISTOR 2K	1	
VR4002	EVM7NSW00B15	V.RESISTOR 100K	1	
VR6001	EVM7NSW00B24	V.RESISTOR 20K	1	
		CRYSTAL OSCILLATORS		
X1001	VXS0136	CRYSTAL OSCILLATOR	1	
X2001	VXS0154	CRYSTAL OSCILLATOR	1	
X6001	VXS0140	CRYSTAL OSCILLATOR	1	
X6002	VXS0249	CRYSTAL OSCILLATOR	1	
	VEP03471B	LUMINANCE/CHROMINANCE C.B.A.		
		CAPACITORS		
C3001	ECEA1CKK100	E.CAPACITOR 16V 10U	1	
C3002	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3003	ECUX1E1042FM	CHIP 25V 0.1U	1	
C3004	ECUX1E1042FM	CHIP 25V 0.1U	1	
C3005	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3006	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3007	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3008	ECUX1E1042FM	CHIP 25V 0.1U	1	
C3009	ECUX1H680JCM	CHIP 50V 68P	1	
C3011	ECUX1E331KBM	CHIP 25V 330P	1	
C3013	ECUX1E1052FM	CHIP 25V 1U	1	
C3028	ECUX1H820JCM	CHIP 50V 82P	1	
C3030	ECUX1H391KBM	CHIP 50V 390P	1	
C3031	ECUX1H390JCM	CHIP 50V 39P	1	
C3033	ECUX1E220JCM	CHIP 25V 22P	1	
C3034	ECUX1E220JCM	CHIP 25V 22P	1	
C3035	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3036	ECEAQJS470	E.CAPACITOR 6.3V 47U	1	
C3037	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3038	ECUX1H390JCM	CHIP 50V 39P	1	
C3040	ECUX1E101JCM	CHIP 25V 100P	1	
C3041	ECSE1VY104Z	T.CAPACITOR 35V 0.1U	1	
C3042	ECUX1H471KBM	CHIP 50V 470P	1	
C3043	ECUM1H271JV	CHIP 50V 270P	1	
C3044	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3045	ECEAQJSJ151	E.CAPACITOR 6.3V 150U	1	
C3046	ECUX1H681KBM	CHIP 50V 680P	1	
C3047	ECUM1H221KBV	CHIP 50V 220P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C3049	ECUX1H3332FN	CHIP 50V 0.033U	1	
C3050	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3051	ECEA1EKK3R3	E.CAPACITOR 25V 3.3U	1	
C3052	ECEA1CKK100	E.CAPACITOR 16V 10U	1	
C3053	ECEAQJS220	E.CAPACITOR 6.3V 22U	1	
C3054	ECEA1EKK3R3	E.CAPACITOR 25V 3.3U	1	
C3055	ECEA1EKK2R2	E.CAPACITOR 25V 2.2U	1	
C3057	ECUX1H680JCM	CHIP 50V 68P	1	
C3058	ECUX1C1052F	CHIP 16V 1U	1	
C3059	ECUX1C1052F	CHIP 16V 1U	1	
C3060	ECUM1H221KBV	CHIP 50V 220P	1	
C3061	ECUX1H560KBM	CHIP 50V 56P	1	
C3063	ECUX1E270JCM	CHIP 25V 27P	1	
C3065	ECUX1H390JCM	CHIP 50V 39P	1	
C3066	ECUX1H680JCM	CHIP 50V 68P	1	
C3068	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3069	ECUX1E330JCM	CHIP 25V 33P	1	
C3070	ECUX1H681KBM	CHIP 50V 680P	1	
C3071	ECEAQJS470	E.CAPACITOR 6.3V 47U	1	
C3072	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3073	ECUX1C1052F	CHIP 16V 1U	1	
C3075	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3077	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3078	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3079	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3080	ECUX1E151JVM	CHIP 25V 150P	1	
C3081	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3082	ECUX1H681KBM	CHIP 25V 680P	1	
C3083	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3084	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3085	ECEAQJSJ151	E.CAPACITOR 6.3V 150U	1	
C3086	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3087	ECEA1EKK3R3	E.CAPACITOR 25V 3.3U	1	
C3088	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3089	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3090	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3091	ECUX1H560JCM	CHIP 50V 56P	1	
C3092	ECUX1E1000CM	CHIP 25V 10P	1	
C3093	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3094	ECUX1E1032FM	CHIP 25V 0.01U	1	
C3097	ECUX1E220JCM	CHIP 25V 22P	1	
C3098	ECUX1E220JCM	CHIP 25V 22P	1	
C3102	ECUX1H560KBM	CHIP 50V 56P	1	
C3105	ECUX1E220JCM	CHIP 25V 22P	1	
C3106	ECUX1E1042FM	CHIP 25V 0.1U	1	
C3109	EOCF1H050CC	C.CAPACITOR 50V 5P	1	
C8001	ECEAQJS470	E.CAPACITOR 6.3V 47U	1	
C8002	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8003	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8004	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8005	ECUX1E332KBM	CHIP 25V 3320P	1	
C8006	ECEAQJS470	E.CAPACITOR 6.3V 47U	1	
C8007	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8009	ECUX1H680JCM	CHIP 50V 68P	1	
C8010	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8011	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8012	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8013	ECUX1E1042FM	CHIP 25V 0.1U	1	
C8014	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8015	ECUM1H2232FM	CHIP 50V 0.022U	1	
C8016	ECUM1E2242FM	CHIP 25V 0.22U	1	
C8017	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8018	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8019	ECUX1H4722FM	CHIP 50V 4700P	1	
C8020	ECUX1H470JCM	CHIP 50V 47	1	
C8021	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8022	ECEAQJS470	E.CAPACITOR 6.3V 47U	1	
C8023	ECEA1H0K2R2	E.CAPACITOR 50V 2.2U	1	
C8024	ECEA1CKK100	E.CAPACITOR 16V 10U	1	
C8025	ECUX1E102KBM	CHIP 25V 1000P	1	
C8026	ECEA1CKS470	E.CAPACITOR 16V 47U	1	
C8027	ECUX1E1032FM	CHIP 25V 0.01U	1	
C8028	ECUX1H1032FN	CHIP 50V 0.01U	1	
C8029	ECEAQJSJ151	E.CAPACITOR 6.3V 150U	1	
C8030	ECUX1E1032FM	CHIP 25V 0.01U	1	





Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
Q3007	2SC3931	TRANSISTOR	1	
Q3008	2SD1819	TRANSISTOR	1	(Q,R)
Q3009	2SD1328	TRANSISTOR	1	
Q3010	2SB1218	TRANSISTOR	1	
Q3020	2SC3931	TRANSISTOR	1	
Q8001	2SC3931	TRANSISTOR	1	
Q8002	2SB1218	TRANSISTOR	1	
Q8003	2SC3931	TRANSISTOR	1	
Q8004	2SC3931	TRANSISTOR	1	
Q8005	2SD1819	TRANSISTOR	1	(Q,R)
Q8010	2SC3931	TRANSISTOR	1	
Q8011	2SD1819	TRANSISTOR	1	
Q8012	XN4601	TRANSISTOR	1	
Q8013	2SD1819	TRANSISTOR	1	
Q8014	2SD1819	TRANSISTOR	1	
Q8015	2SD1819	TRANSISTOR	1	
Q8016	2SD1819	TRANSISTOR	1	
Q8017	2SD1819	TRANSISTOR	1	
Q8018	2SD1819	TRANSISTOR	1	
Q8019	2SD1819	TRANSISTOR	1	
Q8020	2SD1819	TRANSISTOR	1	
Q8022	2SB1218	TRANSISTOR	1	
Q8023	2SC3931	TRANSISTOR	1	
Q8024	2SD1819	TRANSISTOR	1	
		COMBINATION PARTS		
QR3001	UN5213	TRANSISTOR-RESISTOR	1	
QR3002	UN5212	TRANSISTOR-RESISTOR	1	
QR3003	UN5212	TRANSISTOR-RESISTOR	1	
QR3007	UN5213	TRANSISTOR-RESISTOR	1	
QR3008	XN1213	TRANSISTOR-RESISTOR	1	
QR3009	UN5217	TRANSISTOR-RESISTOR	1	
QR3012	XN1213	TRANSISTOR-RESISTOR	1	
QR3015	XN1213	TRANSISTOR-RESISTOR	1	
QR3022	UN5212	TRANSISTOR-RESISTOR	1	
QR3023	XN1213	TRANSISTOR-RESISTOR	1	
QR3025	UN5115	TRANSISTOR-RESISTOR	1	
QR3027	UN5212	TRANSISTOR-RESISTOR	1	
QR3028	UN5213	TRANSISTOR-RESISTOR	1	
QR3029	2SD1819	TRANSISTOR-RESISTOR	1	
QR3030	UN5212	TRANSISTOR-RESISTOR	1	
QR8001	UN5213	TRANSISTOR-RESISTOR	1	
QR8002	UN5213	TRANSISTOR-RESISTOR	1	
QR8003	XN4215	TRANSISTOR-RESISTOR	1	
QR8004	UN5212	TRANSISTOR-RESISTOR	1	
QR8010	UN5212	TRANSISTOR-RESISTOR	1	
QR8011	UN5212	TRANSISTOR-RESISTOR	1	
QR8012	UN5212	TRANSISTOR-RESISTOR	1	
		RESISTORS		
R3001	ERJ3GEYJ392	CHIP 1/20W 3.9K	1	
R3002	ERJ3GEYJ270	CHIP 1/20W 27	1	
R3003	ERJ3GEYJ270	CHIP 1/20W 27	1	
R3004	ERJ3GEYJ392	CHIP 1/20W 3.9K	1	
R3005	ERJ3GEYJ392	CHIP 1/20W 3.9K	1	
R3006	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R3007	ERJ3GEYJ393	CHIP 1/20W 39K	1	
R3008	ERJ3GEYJ271	CHIP 1/20W 270	1	
R3009	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R3011	ERJ3GEYOR00	CHIP 1/20W 0	1	
R3012	ERJ3GEYOR00	CHIP 1/20W 0	1	
R3013	ERJ3GEYJ121	CHIP 1/20W 120	1	
R3014	ERJ3GEYJ270	CHIP 1/20W 27	1	
R3015	ERJ3GEYJ222	CHIP 1/20W 2.2K	1	
R3016	ERJ3GEYJ331	CHIP 1/20W 330	1	
R3030	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3034	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3036	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R3037	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R3040	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3041	ERJ3GEYJ102	CHIP 1/20W 1K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R3042	ERJ3GEYJ271	CHIP 1/20W 270	1	
R3043	ERJ3GEYOR00	CHIP 1/20W 0	1	
R3044	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R3045	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R3046	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3047	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R3048	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3049	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R3050	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3051	ERJ3GEYJ824	CHIP 1/20W 820K	1	
R3054	ERJ3GEYJ822	CHIP 1/20W 8.2K	1	
R3057	ERJ3GEYJ222	CHIP 1/20W 2.2K	1	
R3058	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R3059	ERJ3GEYJ563	CHIP 1/20W 56K	1	
R3060	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R3063	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R3064	ERJ3GEYJ472	CHIP 1/20W 4.7K	1	
R3065	ERJ3GEYJ101	CHIP 1/20W 100	1	
R3066	ERJ3GEYJ393	CHIP 1/20W 39K	1	
R3067	ERJ3GEYJ271	CHIP 1/20W 270	1	
R3068	ERJ3GEYJ331	CHIP 1/20W 330	1	
R3070	ERJ3GEYJ684	CHIP 1/20W 680K	1	
R3071	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R3072	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R3073	ERJ3GEYJ684	CHIP 1/20W 680K	1	
R3074	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R3075	ERJ3GEYJ222	CHIP 1/20W 2.2K	1	
R3076	ERJ3GEYJ101	CHIP 1/20W 100	1	
R3079	ERJ3GEYJ473	CHIP 1/20W 47K	1	
R3081	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3082	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R3084	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R3085	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R3086	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R3087	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R3088	ERJ3GEYJ152	CHIP 1/20W 1.5K	1	
R3089	ERJ3GEYJ271	CHIP 1/20W 270	1	
R3090	ERJ3GEYJ562	CHIP 1/20W 5.6K	1	
R3091	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R3093	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R3096	ERJ3GEYJ391	CHIP 1/20W 390	1	
R3097	ERJ3GEYJ391	CHIP 1/20W 390	1	
R3099	ERD52TJ472	C.RESISTOR 1/4W 4.7K	1	
R3103	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R3104	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R3105	ERJ3GEYJ151	CHIP 1/20W 150	1	
R3106	ERJ3GEYJ471	CHIP 1/20W 470	1	
R3107	ERJ3GEYJ121	CHIP 1/20W 120	1	
R3108	ERJ3GEYJ222	CHIP 1/20W 2.2K	1	
R3110	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R3112	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R3114	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R3115	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R3116	ERJ3GEYJ122	CHIP 1/20W 1.2K	1	
R3117	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R3118	ERJ3GEYJ103	CHIP 1/20W 10K	1	
R3123	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R3124	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R3125	ERJ3GEYJ823	CHIP 1/20W 82K	1	
R3127	ERJ3GEYJ153	CHIP 1/20W 15K	1	
R3131	ERJ3GEYJ182	CHIP 1/20W 1.8K	1	
R3133	ERJ3GEYJ221	CHIP 1/20W 220	1	
R3140	ERJ3GEYJ223	CHIP 1/20W 22K	1	
R8001	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R8002	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R8003	ERJ3GEYJ820	CHIP 1/20W 82	1	
R8004	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R8005	ERJ3GEYJ273	CHIP 1/20W 27K	1	
R8006	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R8007	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R8008	ERJ3GEYJ102	CHIP 1/20W 1K	1	
R8009	ERJ3GEYJ682	CHIP 1/20W 6.8K	1	
R8010	ERJ3GEYJ333	CHIP 1/20W 33K	1	
R8011	ERJ3GEYJ272	CHIP 1/20W 2.7K	1	
R8012	ERJ3GEYJ821	CHIP 1/20W 820	1	

Ref.No.	Part No.	Part Name & Description		Pcs	Remarks
R8013	ERJ3GEYJ472	CHIP	1/20W 4.7K	1	
R8014	ERJ3GEYJ273	CHIP	1/20W 27K	1	
R8015	ERJ3GEYJ103	CHIP	1/20W 10K	1	
R8016	ERJ3GEYJ470	CHIP	1/20W 47	1	
R8017	ERJ3GEYJ123	CHIP	1/20W 12K	1	
R8018	ERJ3GEYJ102	CHIP	1/20W 1K	1	
R8019	ERJ3GEYJ182	CHIP	1/20W 1.8K	1	
R8020	ERJ3GEYJ102	CHIP	1/20W 1K	1	
R8021	ERJ3GEYOR00	CHIP	1/20W 0	1	
R8022	ERJ3GEYJ272	CHIP	1/20W 2.7K	1	
R8023	ERJ3GEYJ271	CHIP	1/20W 270	1	
R8024	ERJ3GEYOR00	CHIP	1/20W 0	1	
R8025	ERJ3GEYJ122	CHIP	1/20W 1.2K	1	
R8026	ERJ3GEYJ102	CHIP	1/20W 1K	1	
R8027	ERJ3GEYJ183	CHIP	1/20W 18K	1	
R8028	ERJ3GEYJ123	CHIP	1/20W 12K	1	
R8029	ERJ3GEYJ331	CHIP	1/20W 330	1	
R8030	ERJ3GEYJ390	CHIP	1/20W 39	1	
R8031	ERJ3GEYJ102	CHIP	1/20W 1K	1	
R8032	ERJ3GEYJ223	CHIP	1/20W 22K	1	
R8033	ERJ3GEYJ102	CHIP	1/20W 1K	1	
R8034	ERJ3GEYJ122	CHIP	1/20W 1.2K	1	
R8035	ERJ3GEYJ822	CHIP	1/20W 8.2K	1	
R8036	ERJ3GEYJ562	CHIP	1/20W 5.6K	1	
R8038	ERJ3GEYJ105	CHIP	1/20W 1M	1	
R8039	ERJ8GCYJ682	CHIP	1/8W 6.8K	1	
R8040	ERJ3GEYJ822	CHIP	1/20W 8.2K	1	
R8041	ERJ3GEYOR00	CHIP	1/20W 0	1	
R8045	ERJ3GEYJ392	CHIP	1/20W 3.9K	1	
R8046	ERJ3GEYJ391	CHIP	1/20W 390	1	
R8047	ERJ3GEYJ122	CHIP	1/20W 1.2K	1	
R8048	ERJ3GEYJ681	CHIP	1/20W 680	1	
R8049	ERJ3GEYJ103	CHIP	1/20W 10K	1	
R8050	ERJ3GEYJ223	CHIP	1/20W 22K	1	
R8051	ERJ3GEYJ681	CHIP	1/20W 680	1	
R8052	ERJ3GEYJ122	CHIP	1/20W 1.2K	1	
R8053	ERJ3GEYJ561	CHIP	1/20W 560	1	
R8054	ERJ3GEYJ221	CHIP	1/20W 220	1	
R8055	ERJ3GEYJ221	CHIP	1/20W 220	1	
R8056	ERJ3GEYJ102	CHIP	1/20W 1K	1	
R8057	ERJ3GEYJ102	CHIP	1/20W 1K	1	
R8058	ERJ3GEYJ681	CHIP	1/20W 680	1	
R8059	ERJ3GEYJ223	CHIP	1/20W 22K	1	
R8060	ERJ3GEYJ123	CHIP	1/20W 1.2K	1	
R8061	ERJ3GEYJ122	CHIP	1/20W 1.2K	1	
R8062	ERJ3GEYJ102	CHIP	1/20W 1K	1	
R8063	ERJ3GEYJ103	CHIP	1/20W 10K	1	
R8064	ERJ3GEYJ393	CHIP	1/20W 39K	1	
R8065	ERJ3GEYJ221	CHIP	1/20W 220	1	
R8066	ERJ3GEYJ154	CHIP	1/20W 150K	1	
R8067	ERJ3GEYJ103	CHIP	1/20W 10K	1	
R8068	ERJ3GEYJ223	CHIP	1/20W 22K	1	
R8069	ERJ3GEYJ123	CHIP	1/20W 12K	1	
R8070	ERJ3GEYJ104	CHIP	1/20W 100K	1	
R8071	ERJ3GEYJ391	CHIP	1/20W 390	1	
R8072	ERJ3GEYJ332	CHIP	1/20W 3.3K	1	
R8073	ERJ3GEYJ821	CHIP	1/20W 820	1	
R8074	ERJ3GEYJ102	CHIP	1/20W 1K	1	
R8075	ERJ3GEYJ473	CHIP	1/20W 47K	1	
R8076	ERJ3GEYJ473	CHIP	1/20W 47K	1	
R8077	ERJ3GEYJ821	CHIP	1/20W 820	1	
R8078	ERJ3GEYJ272	CHIP	1/20W 2.7K	1	
R8079	ERJ3GEYJ222	CHIP	1/20W 2.2K	1	
R8080	ERJ3GEYJ473	CHIP	1/20W 47K	1	
R8081	ERJ3GEYJ222	CHIP	1/20W 2.2K	1	
R8082	ERJ3GEYJ561	CHIP	1/20W 560	1	
R8083	ERJ3GEYJ561	CHIP	1/20W 560	1	
R8084	ERJ3GEYJ223	CHIP	1/20W 22K	1	
R8085	ERJ3GEYJ393	CHIP	1/20W 39K	1	
R8086	ERJ3GEYJ471	CHIP	1/20W 470	1	
R8087	ERJ3GEYJ103	CHIP	1/20W 10K	1	
R8088	ERJ3GEYJ222	CHIP	1/20W 2.2K	1	
R8089	ERJ3GEYJ562	CHIP	1/20W 5.6K	1	
R8090	ERJ3GEYJ104	CHIP	1/20W 100K	1	
R8091	ERJ3GEYJ203	CHIP	1/20W 20K	1	

[illegible]



[illegible]







### 3.VW-AMC1E/B/A/EA/EN/EM Mechanical Replacement Parts List

Note:1.\* Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE

2.IMPORTANT SAFETY NOTICE  
Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.

[illegible]

## 4.

## Electrical Replacement Parts List

Note:1.\* Be sure to make your orders of replacement parts according to this list.  
 2.IMPORTANT! SAFETY NOTICE  
 Components identified with the mark <1> have the special characteristics for safety. When replacing any of these components, use only the same type.  
 3.Unless otherwise specified,  
 All resistors are in OHMS ,K=1,000 OHMS. All capacitors are in MICRO-FARADS(uf),P=µF.  
 4.The P.C.Board units marked with '■' show below the main assembled parts.

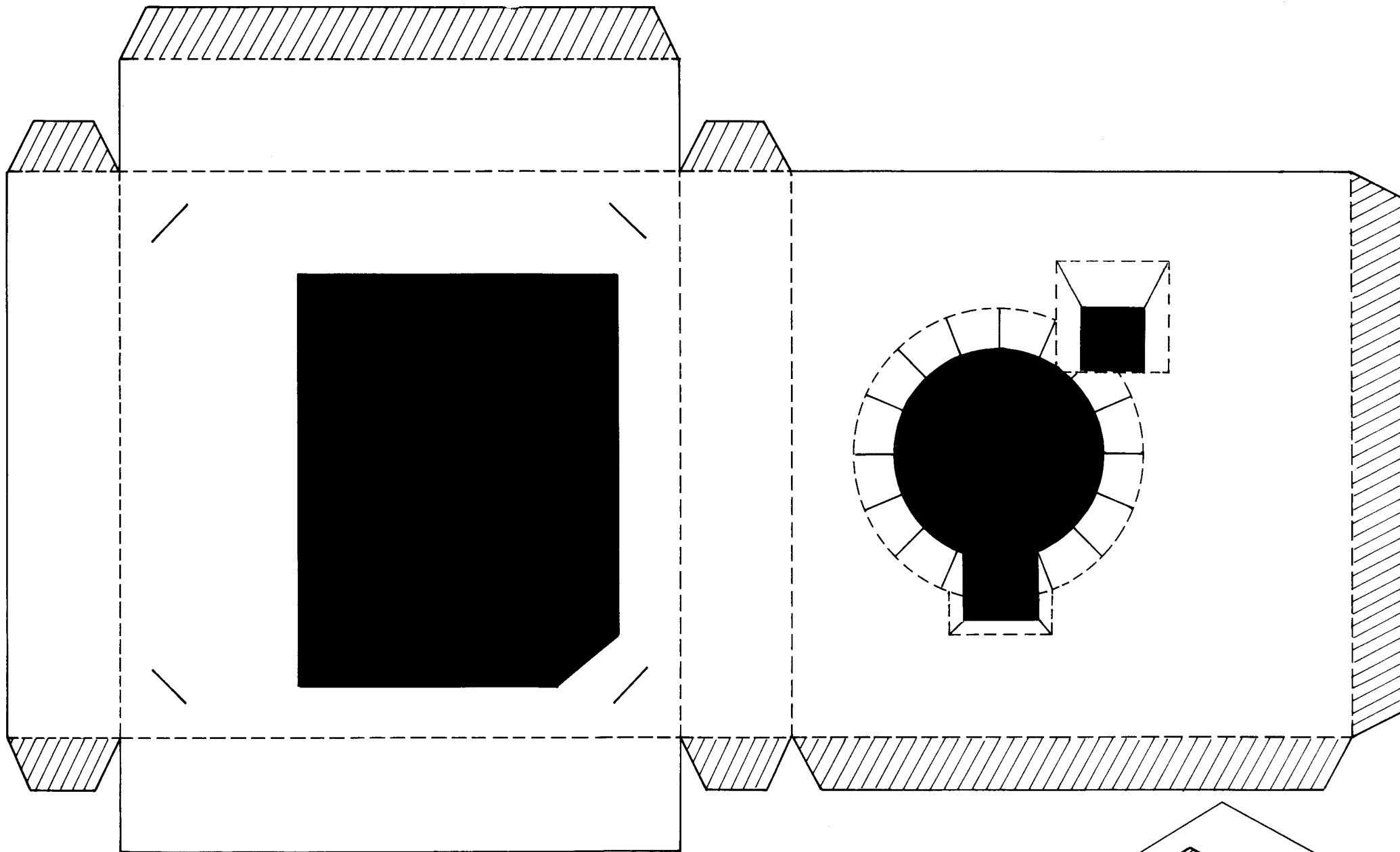
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP61011A	MAIN C.B.A.	1	
	VEP60050A	PRIMARY COIL CONTROL C.B.A.	1	
	VEP60051A	CHARGE CONTROL C.B.A.	1	
	VEP60049A	LED C.B.A.	1	
	■ VEP61011A	MAIN C.B.A.	1	
		CAPACITORS		
C05	ECQU2A104MN	P.CAPACITOR 100V 0.1U	1 <1>	
C06	VCK0046	C.CAPACITOR 1000P	1 <1>	
C07	VCK0046	C.CAPACITOR 1000P	1 <1>	
C08	VCK0046	C.CAPACITOR 1000P	1 <1>	
C09	ECKD2H151KB	E.CAPACITOR 500V 150U	1	
C10	ECOS2GG470D	E.CAPACITOR 400V 47U	1	
C11	ECQE2104KF	P.CAPACITOR 0.1U	1	
C12	ECCD3A470KGE	C.CAPACITOR 1KV 47U	1	
C13	ECKD2H101KB	E.CAPACITOR 500V 100U	1	
C14	ECEA1VGE220	E.CAPACITOR 35V 22U	1	
C15	ECEA1VFE101	E.CAPACITOR 35V 100U	1	
C16	ECEA1EFE471	E.CAPACITOR 25V 470U	1	
C17	ECEA1EFE471	E.CAPACITOR 25V 470U	1	
C18	ECEA1CKS100	E.CAPACITOR 16V 10U	1	
C19	ECEA1CKS100	E.CAPACITOR 16V 10U	1	
C20	ECEA1EGE471	E.CAPACITOR 25V 470U	1	
C21	ECEA1VFE270	E.CAPACITOR 35V 27U	1	
C22	ECEA0JKS470	E.CAPACITOR 6.3V 47U	1	
C23	ECEA1CKS100	E.CAPACITOR 16V 10U	1	
C24	ECKF1H103ZF	C.CAPACITOR 50V 0.01U	1	
C25	ECKF1H103ZF	C.CAPACITOR 50V 0.01U	1	
C26	VCK0046	C.CAPACITOR 1000P	1 <1>	
		DIODES		
D01	S1WBA60	DIODE	1 <1>	
D02	AP01CV2	DIODE	1	
D03	ERA82-004	DIODE	1	
D04	MA4270LTA	DIODE	1	
D05	ERA22-04	DIODE	1	
D06	ERA22-04	DIODE	1	
D07	MA649	DIODE	1	
D08	MA4110M	DIODE	1	
D09	31DQ04FC5	DIODE	1	
D10	31DQ04FC5	DIODE	1	
D11	MA165	DIODE	1	
D12	MA165	DIODE	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
D13	MA165	DIODE	1	
D14	MA165	DIODE	1	
D15	ERA22-04	DIODE	1	
D16	MA4062M	DIODE	1	
D17	MA4062M	DIODE	1	
D18	MA4062M	DIODE	1	
D19	ERA22-04	DIODE	1	
		FUSE		
F01	XBA2C10TBO	FUSE	1 <1>	
		INTEGRATED CIRCUITS		
IC01	HA178L05	IC	1	
		CONNECTOR		
JK1	VJJ0174	CONNECTOR	1	
		COILS		
L02	ELF18D290A	COIL 29UH	1 <1>	
L03	ELF18D290A	COIL 29UH	1 <1>	
L04	VLQ0292	COIL	1	
L5	VLP0043	COIL	1	
L6	VLP0043	COIL	1	
L07	VLP0064	COIL	1	
L08	VLP0064	COIL	1	
		CONNECTORS		
P1	VJP1141	CONNECTOR (MALE)	1	
P2	VJP1141	CONNECTOR (MALE)	1	
		PHOTO COUPLER		
PC01	PC111	PHOTO COUPLER	1 <1>	
		TRANSISTORS		
Q01	2SK808	TRANSISTOR	1 <1>	
Q02	2SB952	TRANSISTOR	1	
Q03	2SB952	TRANSISTOR	1	
Q04	2SB952	TRANSISTOR	1	
Q05	2SD1458	TRANSISTOR	1	
Q06	2SD636	TRANSISTOR	1 (Q,R,S)	
Q07	2SD636	TRANSISTOR	1 (Q,R,S)	
		RESISTORS		
R01	ERC12GM334	S.RESISTOR 1/2W 330K	1 <1>	
R02	ERDS2TJ114	C.RESISTOR 1/4W 110K	1	
R03	ERDS2TJ114	C.RESISTOR 1/4W 110K	1	
R04	ERDS2TJ114	C.RESISTOR 1/4W 110K	1	
R05	ERDS2TJ114	C.RESISTOR 1/4W 110K	1	
R06	ERG2SJ333	M.RESISTOR 2W 33K	1	
R07	ERG2SJ333	M.RESISTOR 2W 33K	1	
R08	ERX1SJR82P	M.RESISTOR 1W 0.82	1	
R09	ERDS2TJ221	C.RESISTOR 1/4W 220	1	
R10	ERDS2TJ470	C.RESISTOR 1/4W 47	1	
R11	ERDS2TJ223	C.RESISTOR 1/4W 22K	1	
R12	ERDS2TJ183	C.RESISTOR 1/4W 18K	1	
R13	ERDS2TJ331	C.RESISTOR 1/4W 330	1	
R14	EROS2CKG8201	M.RESISTOR 1/4W 8.2K	1	
R15	ERDS2TJ181	C.RESISTOR 1/4W 180	1	
R16	ERDS2TJ821	C.RESISTOR 1/4W 820	1	
R17	ERDS2TJ103	C.RESISTOR 1/4W 10K	1	
R18	ERDS2TJ103	C.RESISTOR 1/4W 10K	1	
R19	ERDS1TJ101	C.RESISTOR 1/2W 100	1	
R20	ERDS1TJ181	C.RESISTOR 1/2W 180	1	
R21	ERDS1TJ181	C.RESISTOR 1/2W 180	1	
R22	ERX1SJR33P	M.RESISTOR 1W 0.33	1	




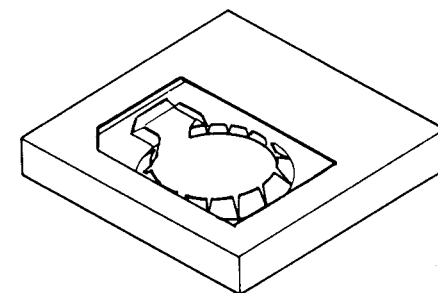






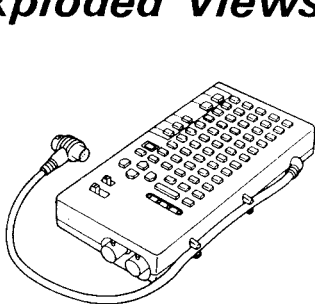
**Assembling Procedure.**

- 1) Cut the " ——— " line.
- 2) Fold the " - - - - - " line and paste on the "  " part, and assemble (make) the box as shown in right side.
- 3) Use the this box when you adjust the AWT white tracking.



# Service Manual

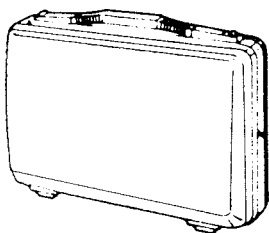
*General Description*  
*Adjustment Procedures*  
*Block/Schematic Diagrams*  
*Exploded Views/Parts List*



VW-RFC1



VW-CG1



VW-SHMC1



VW-GPC1

**VW-CG1 E/EN**

ITEM	SPECIFICATIONS	
POWER	DC 4.85V	
VIDEO	INPUT: VIDEO IN CONNECTOR	(VW-CG1E: BNC type)
	1.0Vp-p 75 $\Omega$ terminated	(VW-CG1EN: PHONO type)
	OUTPUT: VIDEO OUT CONNECTOR	(VW-CG1E: BNC type)
	1.0Vp-p 75 $\Omega$ terminated	(VW-CG1EN: PHONO type)
WEIGHT	155 g (without Batteries)	
DIMENSIONS	71 (W) $\times$ 142 (H) $\times$ 26 (D) mm	
ACCESSORIES	3pcs. Button-type Alkaline Batteries (LR44H) 1pc. Shoe Adaptor	

**VW-RFC1 E/B/A/EN**

ITEM	SPECIFICATIONS	
RF OUT SYSTEM	UHF: 36 $\pm$ 4 CH	(VW-RFC1 E/B/EN) (PAL G/I)
	VHF: 0/1 CH	(VW-RFC1A) (PAL G)
DIMENSIONS	52 (W) $\times$ 24 (H) $\times$ 93 (D)	

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.



## INTRODUCTION

*This servicemanual contains technical information which will allow service technicians to understand and service these models. VW-CG1, VW-RFC1, VW-SHMC1, VW-GP1 are accessories for NV-MC10. VW-CG1 can be used to NV-M7.*

*Please place orders using the parts list and not the drawing reference numbers.*

*If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.*

## CONTENTS

### 1.VW-CG1E, EN

#### SECTION 1: GENERAL DESCRIPTIONS

1-1-1. Features .....	1
1-1-2. How to Attach The Character Generator .....	1
1-1-3. Controls, Components and Functions .....	2
1-1-4. Installing The Batteries .....	3
1-1-5. Setting The Clock .....	4
1-1-6. Composing and Editing The Titles .....	5
1-1-7. Title Recording .....	8
1-1-8. Scroll Recording .....	8
1-1-9. How to Use The Stopwatch .....	10
1-1-10. Superimpose Title Recording During Dubbing .....	11

#### SECTION 2: ADJUSTMENT PRODURES

1-2-1. Test Equipments .....	12
1-2-2. How to Read The Adjustment Procedures .....	12
1-2-3. Character Position Adjustment .....	12
1-2-4. Character Sphere Adjustment .....	12
1-2-5. Clock Frequency Adjustment .....	12

#### SECTION 3: BLOCK DIAGRAM & SCHEMATIC DIAGRAM

1-3-1. Block Diagram .....	13
1-3-2. Main C.B.A. (VEP66051D,E) .....	14
1-3-3. Switch C.B. ....	15
1-3-4. Schematic Diagram .....	16

#### SECTION 4: EXPLODED VIEWS

1-4-1. Character Generator Section .....	18
1-4-2. Packing Section .....	19

### 2.VW-RFC1E, B, A, EN

2-1. How to Adjust The RF Converter Frequency .....	20
2-2. Schematic Diagram .....	21
2-3. Exploded View .....	22

### 3.VW-SHMC1E, EN

3-1. Exploded View .....	23
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### 4.VW-GPC1E

4-1. How to Use The Handgrip .....	24
4-2. Exploded View .....	24

PARTS LIST .....	25
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# 1. VW-CG1E, EN

## SECTION 1: General Descriptions

### 1-1-1 FEATURES

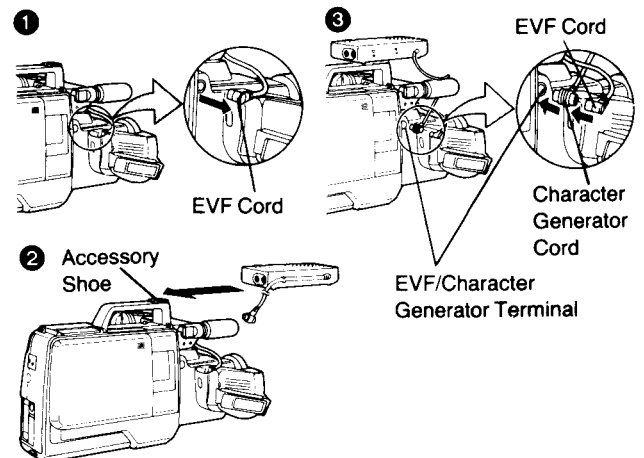
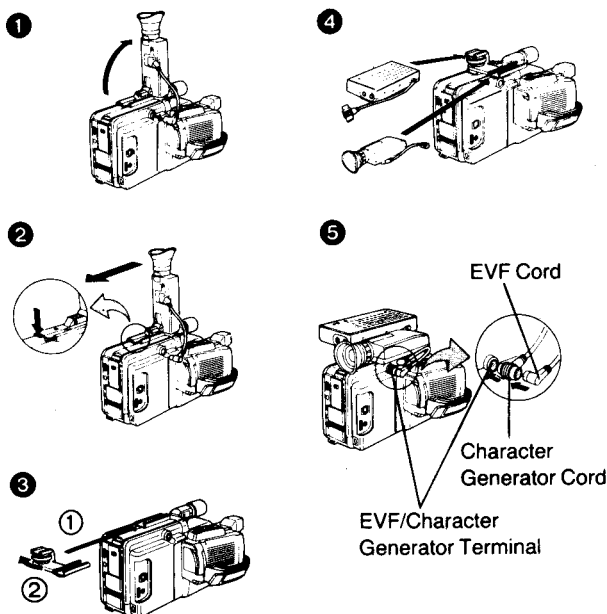
- Title Recording
- Time/Date Recording
- Stopwatch Recording
- Superimpose Title Recording During Dubbing
- Multi-Language Capability

### 1-1-2 HOW TO ATTACH THE VW-CG1

Use the Shoe Adaptor that is supplied with the Character Generator.

The use of the Character Generator makes it possible to record titles, time, date and stopwatch while shooting some scene.

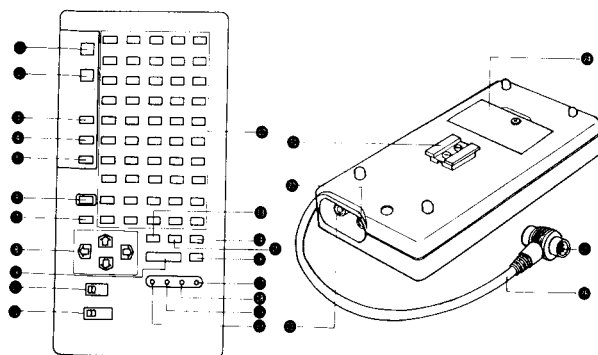
#### How to Attach the Character Generator



- 1 Disconnect the EVF Cord and turn the EVF upward.
- 2 Keep pressing the part indicated by the arrow and remove the EVF by sliding it toward the rear.
- 3 Attach the Shoe Adaptor and tighten the screw.
- 4 Attach the EVF and the Character Generator to the Shoe Adaptor.
- 5 Insert the plug of the EVF Cord into the back of the plug of the Character Generator Cord and insert them together into the EVF/Character Generator Terminal.

- 1 Disconnect the EVF Cord.
- 2 Attach the Character Generator to the Accessory Shoe.
- 3 Insert the plug of the EVF Cord into the back of the plug of the Character Generator Cord and insert them together into the EVF/Character Generator Terminal.

### 1-1-3 CONTROLS COMPONENTS AND FUNCTIONS



- 1 DISPLAY Button**  
For displaying or deleting titles on the screen.
- 2 PAGE Button**  
For changing pages.
- 3 START/STOP Button**  
For starting/stopping the stopwatch, and starting/stopping the scrolling during recording.
- 4 LAP/RESET Button**  
For indicating the lap time, resetting the stopwatch and resetting scrolling to the beginning during preview.
- 5 SCROLL Button**  
This button is used for different functions in the title scroll mode.
- 6 CLEAR Button**  
For returning the cursor to the beginning of the first line. When used with the SHIFT Button, it deletes all titles on the page.
- 7 SPACE Button**  
For leaving a blank space the size of one character.
- 8 Cursor Buttons**  
For moving the cursor or (when used with the SHIFT Button) moving the titles, or changing the scrolling speed.
- 9 SHIFT Button**  
This button must be pressed together with another button.

	Functions
<b>SIZE Button</b>	To change the size of the characters of the line on which the cursor is placed.
<b>Letter/Number/Symbol Buttons</b>	To input small letters while in the capital letter mode, or for inputting capital letters while in the small letter mode. In the symbol mode, this button has no effect.
<b>Cursor Buttons</b>	To move the titles.
<b>PAGE Button</b>	To change to the previous page.
<b>CLEAR Button</b>	To delete all titles on the page being displayed. (The page is also erased in the memory.)

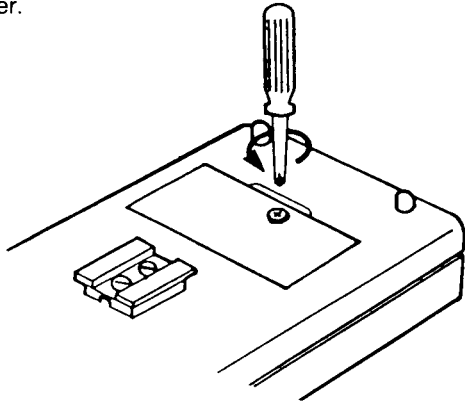
- 10 Date Selector (DATE-DATE/CLOCK)**  
For selecting the Date Indication or the Date/Clock Indication.
- 11 Mode Selector**  
For selecting the mode (title editing, title recording, stopwatch, auto date).
- 12 Letter/Number/Symbol Buttons**  
For inputting letters, numbers and symbols.
- 13 SIZE Button**  
For selecting the size of the characters for the titles.
- 14 SYMBOL Button**  
For inputting symbols.
- 15 SMALL LETTER Button**  
For selecting capital letters (upper case) or small letters (lower case).
- 16 DELETE Button**  
For deleting one character to the left of the cursor.
- 21 Mounting Adaptor Foot**  
Attach the supplied Shoe Adaptor and mount the Character Generator on the VHS/VHS-C Movie.
- 22 Video Input Jack (VIDEO IN)**  
For superimposing titles while dubbing from the VHS/VHS-C Movie onto another VTR.
- 23 Video Output Jack (VIDEO OUT)**  
For superimposing titles while dubbing from the VHS/VHS-C Movie onto another VTR.
- 24 Battery Compartment**  
Install the button-type batteries for memory back-up.
- 25 EVF Terminal**  
Connect the Electronic Viewfinder of the VHS/VHS-C Movie to this terminal.
- 26 Connection Cable**  
Connect this cable to the EVF Terminal of the VHS/VHS-C Movie.

#### Buttons used for setting the date and the time (17 ~ 19)

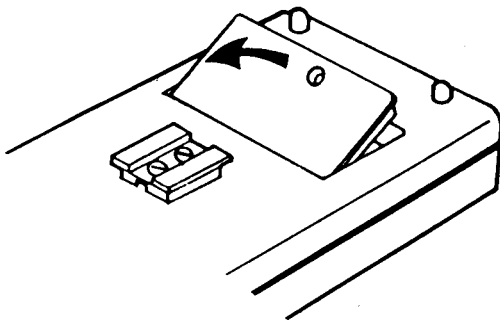
- 17 SET Button**
- 18 SHIFT Button**
- 19 ADJ Button**
- 20 ALL RESET Button**  
Pressing this button deletes all memorized titles.

## 1-1-4 INSTALLING THE BATTERIES

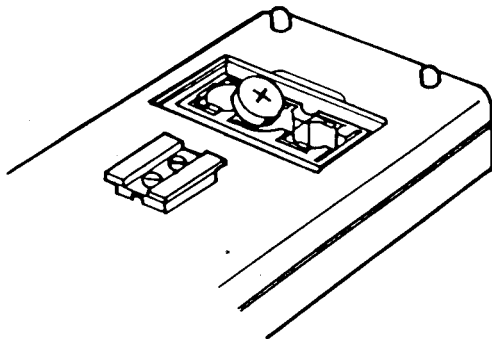
1. Remove the screw of the battery compartment cover with a screwdriver.



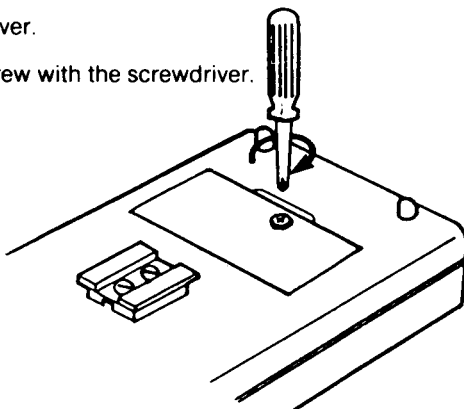
2. Remove the cover.



3. Insert three button-type alkaline batteries (LR44H) with their plus (+) side facing up.



4. Replace the cover.
5. Tighten the screw with the screwdriver.



In this Character Generator, three button-type alkaline batteries (LR44H) are used for memory back-up. Even when the VHS/VHS-C Movie is turned off, the composed titles are still memorized as long as the batteries are not exhausted. The battery life is approximately 3~4 months.

### •Replacing the Batteries

If the batteries are replaced with the Character Generator or the VHS/VHS-C Movie turned off, the memory will be erased.

When replacing the batteries, follow the instructions below.

1. Connect the Character Generator to the VHS/VHS-C Movie, and turn the camera on.
2. Install three new batteries.

Besides the LR44H type batteries, MR44, NR44 and LR44 type batteries can also be used.

### Button-type Alkaline Batteries

Keep the button-type alkaline batteries out of the reach of children. If a battery is swallowed, consult a doctor immediately.

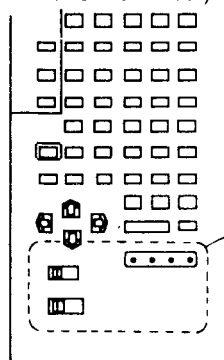
- If battery leakage has occurred, wipe off the liquid completely and then install new batteries.

To prevent bursting or leaking of the batteries:

- Be sure to replace all three batteries with new ones at the same time.
- Install the batteries with their polarities (+) and (-) correctly aligned.
- Do not short-circuit, charge, disassemble or overheat the batteries, nor throw them into a fire.

## 1-1-5 SETTING THE CLOCK

Turn on the VHS/VHS-C Movie to which the Character Generator is connected, and set the clock while watching the Electronic Viewfinder (or the TV screen when the camera is connected to the TV set).

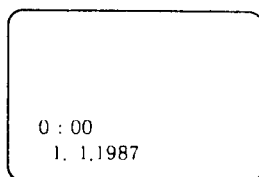
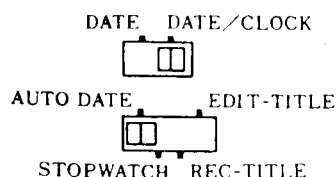


The clock can only be set with the buttons and switches of this section.

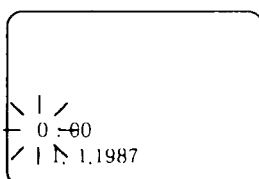
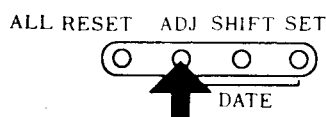
Automatic clock indication is possible till December 31, 2010, 23:59, as long as the batteries are not exhausted. When the clock is reset, it will start from January 1, 1987, 0:00.

- When the batteries become weak, a wrong date and time will be displayed (for example, 15:70). In this case, immediately replace the batteries with new ones. After the replacement, set the date and time again.

1. Set the Mode Selector to "AUTO DATE" and the Date Selector to "DATE/CLOCK".
  - The date and time will be displayed in the lower left corner of the screen.
  - When the Date Selector is set to "DATE", only the date will be displayed.

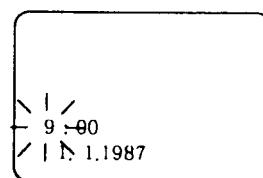
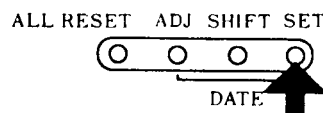


2. Press the ADJ Button.
  - The first part of the indication will flash.
  - Press the ADJ, SHIFT and SET Buttons with the tip of a ball-point pen, etc.

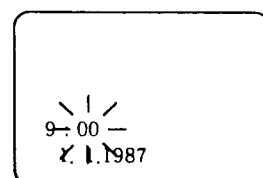
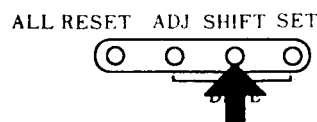


3. Set the flashing part of the indication by pressing the SET Button.

- Keeping the SET Button pressed will change the indication continuously.



4. Press the SHIFT Button.
  - The next part of the indication will flash.



- Repeat steps 3 and 4 to set the hour, minute, day, month and year.

5. When the setting of the clock is completed, press the ADJ Button again.

- The operation of the clock will now start.

### • How the Indications Change

Hour	0 → 1 → 2 → 3 → 4 → ... → 22 → 23
Minute	00 → 01 → 02 → 03 → ... → 57 → 58 → 59
Day	1 → 2 → 3 → 4 → ... → 28 → (29) → (30) → (31)
Month	1 → 2 → 3 → 4 → 5 → ... → 10 → 11 → 12
Year	1987 → 1988 → 1989 → ... → 2009 → 2010

### • How the Flashing Part of the Indication Changes

Hour → Minute → Day → Month → Year

### • Moving the Display Position

Press the appropriate Cursor Button while pressing the SHIFT Button. Just like your own titles, the date and time indication can also be moved up and down, right and left.

- The new position of the date and time indication will be memorized.

### • Recording the Date and/or the Time

Set the Mode Selector to "AUTO DATE".

- The date and/or the time can be recorded in the same way as the titles. (See page 18.)
- It is possible to display or delete the indication by pressing the DISPLAY Button.

## 1-1-6 COMPOSING AND EDITING THE TITLES

Before shooting, compose and edit titles that you may later want to use during recording.

As the composed titles are memorized, it is possible to revise them later and to insert them at desired positions during recording.

Compose and edit the titles while watching the Electronic Viewfinder of the VHS/VHS-C Movie, or the TV screen. Connect the VHS/VHS-C Movie to the TV set in the same way as when the Character Generator is not mounted. (See the operating instructions of the VHS/VHS-C Movie.)

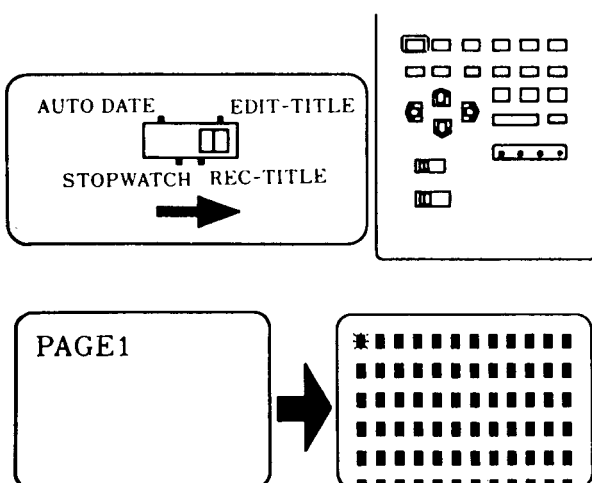
### • Title Pages

Title pages 1 to 9 can be used for titles only and on PAGE A, both titles and auto date indication can be displayed at the same time. (See the table below.)

Display Contents and Functions	PAGE 1 ~ PAGE 9	PAGE A
Character Size	S, M, L, LL	M
Maximum Number of Characters (1 page)	20 characters × 9 lines = 180 characters	12 characters × 4 lines = 48 characters
Title Movement. Scroll Function	Yes	No
Auto Date Indication	No	Yes

### 1. Set the Mode Selector to "EDIT-TITLE".

- The indication "PAGE 1" will be displayed in the upper left corner of the screen for about 1 second and then the "■" marks indicating the character size will appear for 12 characters × 6 lines. (The 6th line will not be displayed completely.)  
The flashing "■" mark indicates the position of the cursor.
- If the Lens Cap is put on the VHS/VHS-C Movie, the indications become easier to see.



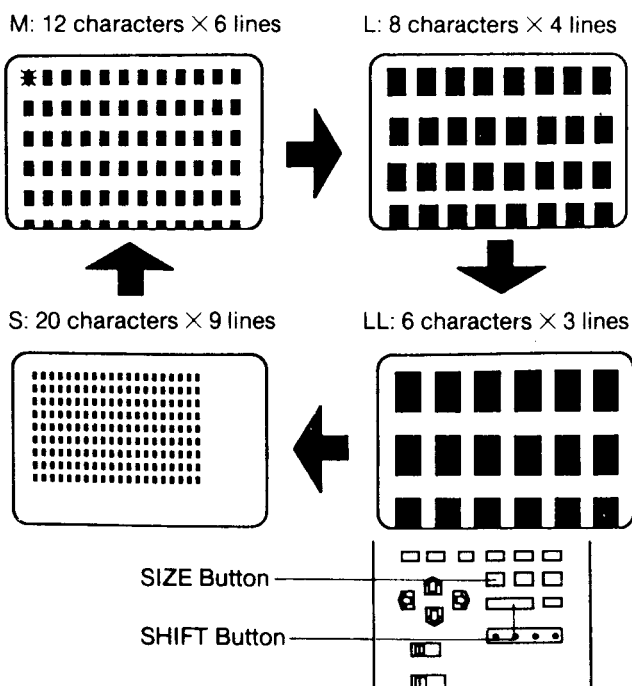
### 2. Select the desired character size by pressing the SIZE Button.

There are four different character sizes to choose from.

#### Changing the Size of All Characters on the Screen

The "M" character size is automatically selected by default. By pressing the SIZE Button, the character size changes as shown below.

- When a character size other than "S" is selected, the last displayed line is not displayed completely.

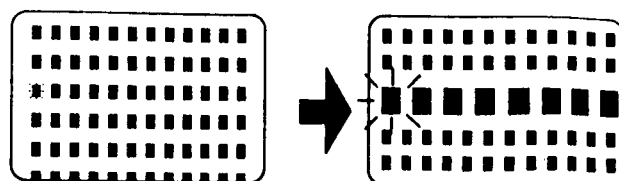


#### Changing the Character Size of a Single Line

Move the cursor to the line where you want to change the character size, and then press the SIZE Button while pressing the SHIFT Button.

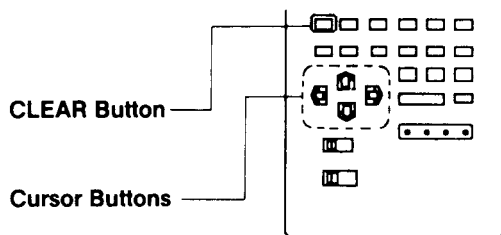
After the size is changed, the cursor will move to the beginning of the line.

- When an already composed title is changed to a larger size, the end of the title may be cut off on the screen because it is too long.



- If the SIZE Button is pressed after changing the character size of individual lines on a page, all lines will be changed to the next larger size, as illustrated on the left.
- It is possible to change the character size after inputting characters.

- To move the cursor to the position where you want to input characters, press the Cursor Button for the desired direction.
  - Keeping the Cursor Button pressed moves the cursor continuously.

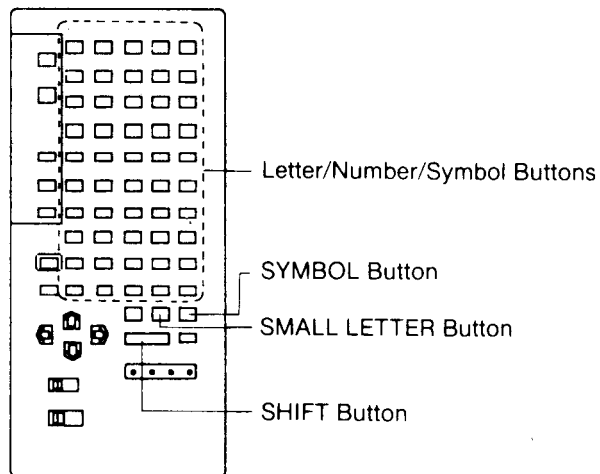


- Button:** The cursor moves to the right. After reaching the end of a line, it moves to the beginning of the next lower line.
- Button:** The cursor moves to the left. After reaching the beginning of a line, it moves to the end of the next higher line.
- Button:** The cursor moves to the beginning of the next lower line. After reaching the bottom line, it returns to the beginning of the top line.
- Button:** The cursor moves to the beginning of the next higher line. After reaching the top line, it returns to the beginning of the bottom line.

- The capacity of a title page is 9 lines irrespective of the character size.
- When a character size other than "S" is selected, the cursor may leave the screen at the right or at the bottom.
- When the CLEAR Button is pressed, the cursor will return to the beginning of the top line.

#### 4. Input characters.

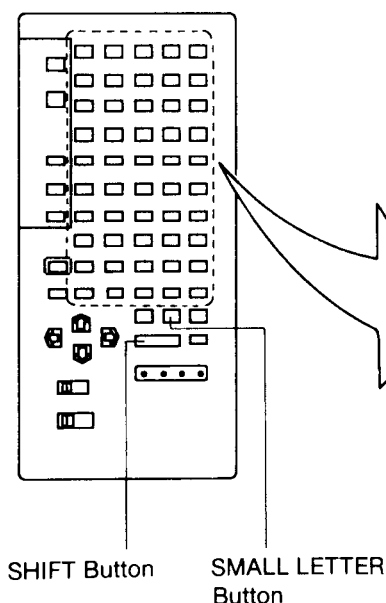
- Use the buttons shown in the illustration below.



#### • Inputting Letters, Numbers and Symbols

By pressing the Letter/Number/Symbol Buttons, the characters which are indicated on the buttons (capital letters) can be input. To input small letters, press the buttons while keeping the SHIFT Button pressed.

- Pressing the SMALL LETTER Button puts the unit in the small letter mode and small letters can be input. To input capital letters while in this mode, input them while pressing the SHIFT Button. To return the unit to the capital letter mode, press the SMALL LETTER Button again.



#### • Capital Letter Mode

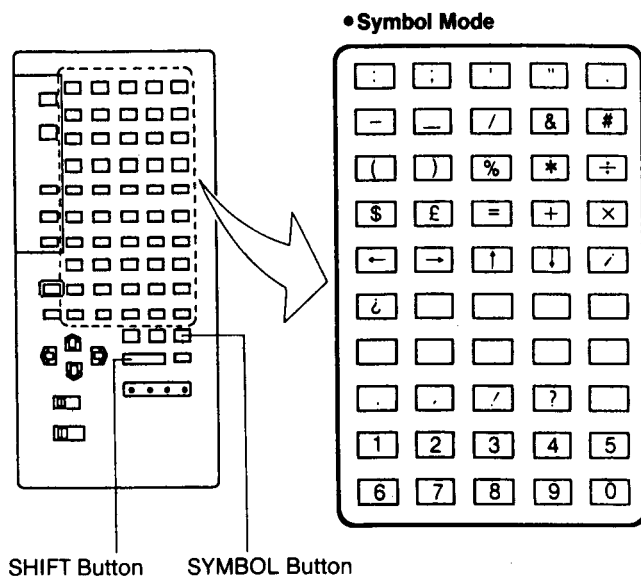
A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y
Z	À	Æ	Ø	Ñ
Ä	Ö	Ü	Š	Å
.	,	!	?	Ö
1	2	3	4	5
6	7	8	9	0

#### • Small Letter Mode

a	b	c	d	e
f	g	h	i	j
k	l	m	n	o
p	q	r	s	t
u	v	w	x	y
z	à	æ	ø	ñ
ä	ö	ü	š	å
ä	ö	ü	e	ç
ä	ö	ü	e	i
ä	ö	e	e	i



- Pressing the SYMBOL Button puts the unit in the symbol mode and symbols can be input. In this mode, the SHIFT Button does not function.

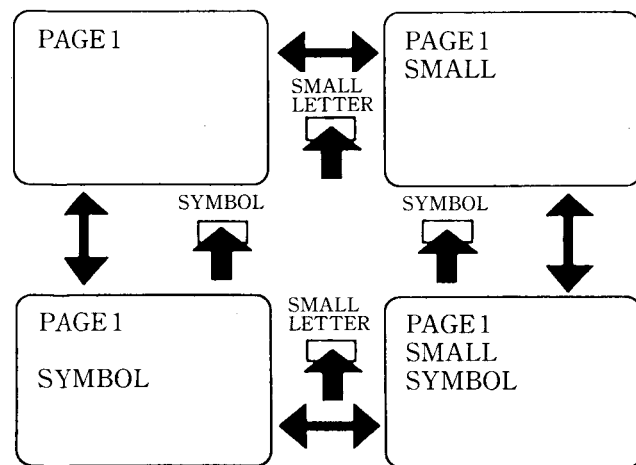


#### • Inputting Spaces

To leave a space between words, press the SPACE Button. You can also create blank space by moving the cursor.

#### • Confirmation of the Selected Input Mode

If the DELETE Button is pressed together with the SHIFT Button, the input mode will be displayed on the screen for confirmation.



- After a character has been input, the cursor will move to the right to the position for the next character.

#### • Deleting Characters

Move the cursor to the right of the character to be deleted and press the DELETE Button. The character to the left of the cursor will be deleted and the cursor will move to the position of the deleted character.

- Keeping the DELETE Button pressed will delete the characters to the left of the cursor continuously.
- If the DELETE Button is pressed when the cursor is at the beginning of the first (top) line, the last character at the end of the last (bottom) line will be deleted.

#### • Deleting All Characters on a Page

To delete all characters on a page, press the CLEAR Button together with the SHIFT Button. The cursor will return to the beginning of the first (top) line and the "■" marks will appear for 12 characters × 6 lines on the screen.

#### • Moving Titles

By pressing the appropriate Cursor Button together with the SHIFT Button, the whole title on the screen can be moved up and down, right and left.

Keeping one of the Cursor Buttons pressed will move the whole title continuously.

- Button:** The whole title moves to the right.
- Button:** The whole title moves to the left.
- Button:** The whole title moves down.
- Button:** The whole title moves up.

- When moving titles, move them so that they do not leave the screen. The characters which are not on the screen will not be recorded in the normal title recording mode.

#### • Changing Pages

To advance to the next page after composing a title on PAGE 1, press the PAGE Button.

- After the indication "PAGE 2" is displayed in the upper left corner of the screen for about 1 second, the "■" marks will appear for 12 characters × 6 lines.
- Pressing the PAGE Button changes the pages as shown below.

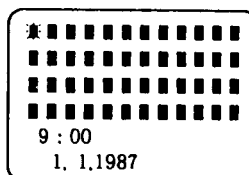
→ PAGE 1 → PAGE 2 → ... → PAGE 9 → PAGE A

- Pressing the PAGE Button together with the SHIFT Button changes the pages backward.

#### • PAGE A

When PAGE A is reached while changing the pages, the "■" marks for 12 characters × 4 lines and the date and time are displayed.

- It is not possible to move the title or to change the character size on PAGE A.



If the Date Selector is set to "DATE/CLOCK", the date and time will be displayed; if it is set to "DATE", only the date will be displayed under the title.

## 1-1-7 TITLE RECORDING

Recording composed titles during shooting.

1. Insert a tape into the VHS/VHS-C Movie and put the camcorder into the recording pause mode. (For details about the operation, read the Operating Instructions of the VHS/VHS-C Movie.)
2. Set the Mode Selector to "REC-TITLE".
  - When this switch is changed from "EDIT-TITLE" to "REC-TITLE", the page number followed by the title of that page (which was displayed in the "EDIT-TITLE" mode) appear on the screen. In this case, the "■" marks which appeared in the "EDIT-TITLE" mode will not appear on the screen.
3. Select the title page that you want to record.

The pages can be changed in the same way as in the "EDIT-TITLE" mode. It is also possible to select the desired page directly, as described below on the right.

  - When changing the pages in the "REC-TITLE" mode, the page number indication does not appear.
4. Press the DISPLAY Button to remove the title from the screen.
5. Start shooting by pressing the Start/Stop Button on the VHS/VHS-C Movie. At the point where you want to superimpose the title, press the DISPLAY Button. To end the superimpose recording of the title (while letting the shooting continue), press the DISPLAY Button again.

### • Changing the Character Size

Pressing the SIZE Button changes the size of all characters on the screen. The character size will be changed in the same order as in the "EDIT-TITLE" mode. It is not possible to change the character size line by line.

- Any change made in the character size in the "REC-TITLE" mode has no influence on the character size of the title memorized in the "EDIT-TITLE" mode.

### • Moving Titles

To move the title, press the appropriate Cursor Button together with the SHIFT Button in the same way as in the "EDIT-TITLE" mode.

- Moving the titles in the "REC-TITLE" mode has no influence on the title positions memorized in the "EDIT-TITLE" mode.

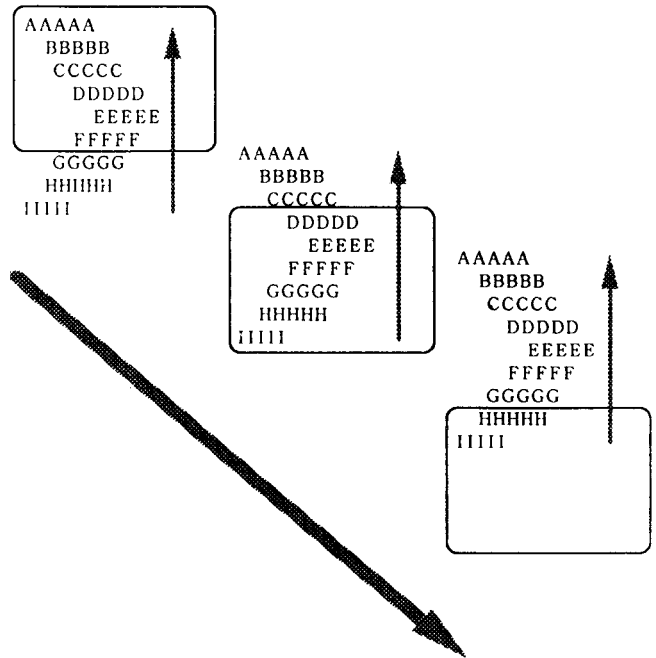
### • How to Select the Desired Page Directly

Select the desired title page directly by pressing the corresponding Number Button (1 ~ 9) or the Letter Button "A".

- If the page or the mode is changed when the title is not displayed, the title will appear automatically.

## 1-1-8 SCROLL RECORDING

The Scroll Recording Function makes it possible to record the composed titles while scrolling them from the bottom to the top of the screen. The scrolling will be performed continuously from the selected page through PAGE 9.



### • Checking the Pages to Be Used for Scrolling

Be sure to check the scroll screen in the "EDIT-TITLE" mode before performing the scroll recording. (See the next page.)

Perform the check page by page.

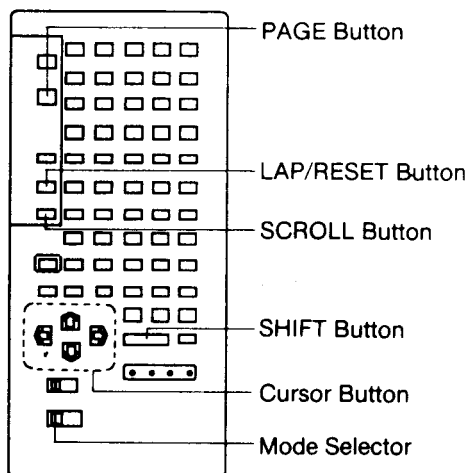
The capacity of the scroll screen is limited to 9 lines per page.

If the titles that were composed in the "EDIT-TITLE" mode use characters of a larger size than "M" or a combination of different character sizes, be careful because the characters which are not displayed on the screen will also be scrolled.

When preparing titles for scrolling, compose them with the character size "S" for 9 lines and then change them to the desired size, starting from the last line. In this way, the titles can be composed while also confirming the characters that will not be displayed on the screen.

Even if you move the title position when composing the titles, all titles will automatically start at the beginning (left side) of each line when they are scrolled. Therefore, compose the titles so that they start at the original position.

For the scroll recording, the buttons and the selector shown in the illustration below are used.



#### • Scrolling Preview

1. Set the Mode Selector to "EDIT-TITLE".
2. Press the SCROLL Button.
3. Scrolling preview will start and the lines 1 to 9 will appear at the bottom of the screen and scroll to the top until the last line has left the screen.
4. The screen will revert to the condition before scrolling.
5. Change to the next page and check it.
  - If the SCROLL Button is pressed in the middle of scrolling, the scrolling will stop and the character in the upper left corner of the screen will flash.
  - In this condition, you can correct the letters and change the character size.
  - To continue scrolling, press the SCROLL Button again.
  - To stop the scrolling preview and return to the beginning of the scrolled title, press the LAP/RESET Button.
  - The screen will return to the former condition and stop.
  - To start scrolling again, press the SCROLL Button.

#### • Recording Procedure

1. Set the Mode Selector to "REC-TITLE".
  - When this switch is changed from "EDIT-TITLE" to "REC-TITLE", the title page which was displayed in the "EDIT-TITLE" mode will appear.
2. Call up the title page from which you want to start scrolling by pressing the PAGE Button repeatedly.
  - You can also select the desired page directly (see page 18).

3. Press the SCROLL Button.
  - The title on the screen will disappear and the unit will be in the scroll standby mode. In this mode, it is not possible to change the page or to select the page directly.
4. Press the START/STOP Button of the Character Generator.
 

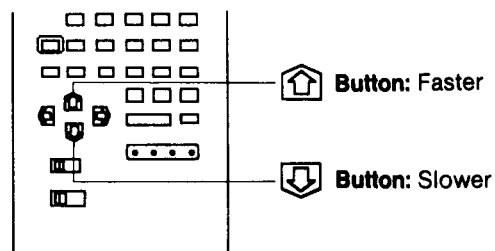
The scrolling will start.

  - PAGE A cannot be scrolled. Even if PAGE A is selected, the scrolling will start from PAGE 1.
  - To interrupt the scrolling at any desired point, press the START/STOP Button.
  - To continue the scrolling, press the START/STOP Button again.
  - When the last line of PAGE 9 has left the top of the screen, the scrolling will finish automatically. At this time, no title will be displayed on the screen.
  - If the LAP/RESET Button is pressed during scrolling, the scrolling will be reset and the start page will be displayed.

#### • Changing the Scrolling Speed

The scrolling speed can be changed in 6 steps in both the "EDIT-TITLE" mode and the "REC-TITLE" mode by pressing the SCROLL Button and then the appropriate Cursor Button.

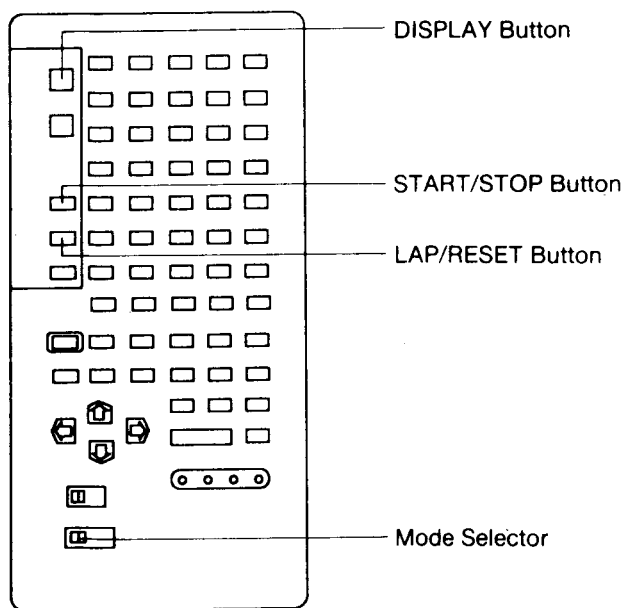
- The changed scrolling speed will be memorized.



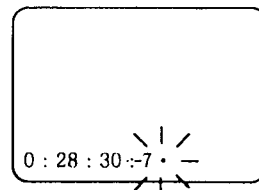
## 1-1-9 HOW TO USE THE STOP WATCH

This Character Generator also features a stopwatch function that counts and displays the elapsed time in 1/10-second increments.

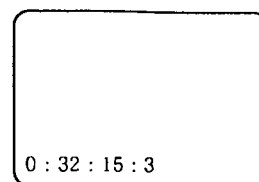
For the stopwatch operation, the buttons and the selector shown in the illustration below are used.



LAP/RESET



LAP/RESET



1. Set the Mode Selector to "STOPWATCH".
    - The stopwatch time will be displayed in the lower left corner of the screen.
  2. Press the START/STOP Button.
    - The stopwatch will start working.
    - It can count and display the time up to 9:59'59"9.
  3. To stop the stopwatch, press the START/STOP Button again.
    - The stopped time will be displayed on the screen.
  4. To continue the counting from that position, press the START/STOP Button again.
  5. To reset the stopwatch to zero, press the START/STOP Button to stop the counting and then press the LAP/RESET Button.
- By pressing the DISPLAY Button, the stopwatch indication can be deleted from the screen and be displayed again.
  - The stopwatch is working even if it is not displayed.

### • Lap Time Indication

If the LAP/RESET Button is pressed while the stopwatch is working, the counter will stop and a blinking dot will appear on the right of the counter indication. Pressing the LAP/RESET Button again will display the actual ongoing count again. The stopwatch continues working while the lap time is displayed. If you press the START/STOP Button in this condition, the dot indicator on the right of the counter indication will stop blinking and be lit and the time counter will stop.

### • Moving the Display Position

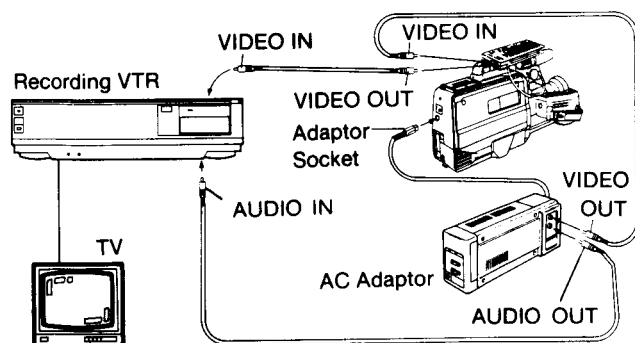
The stopwatch indication can also be moved up and down, right and left, just like the titles. Press the appropriate Cursor Button while pressing the SHIFT Button. The changed display position will be memorized even if the mode is changed.

## 1-1-10 SUPERIMPOSE TITLE RECORDING DURING DUBING

It is possible to add titles to already recorded scenes by superimposing them during dubbing from the VHS/VHS-C Movie.

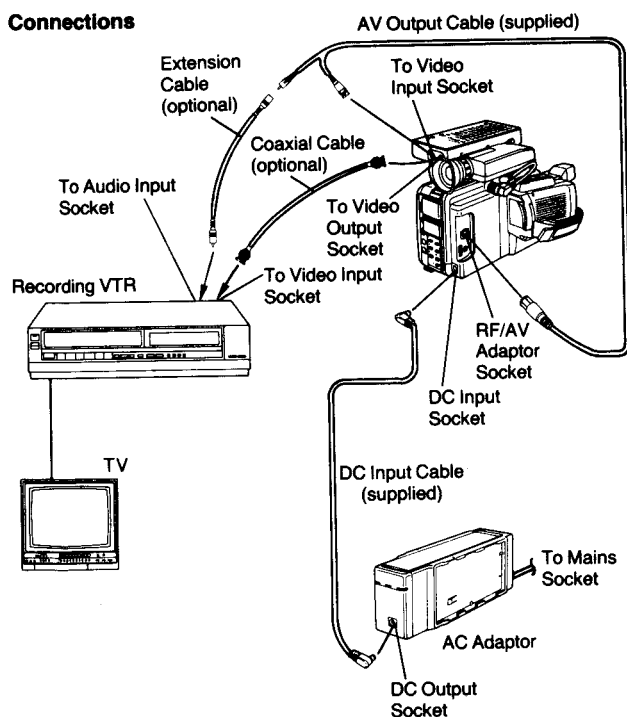
### Connections

- Carefully read the operating instructions of all units to be used.



- Set the Mode Selector on the Character Generator to "REC-TITLE".
  - To superimpose the stopwatch or the date, set the Mode Selector to "STOPWATCH" or "AUTO DATE".
- Select the title page or the mode to be used for the superimpose recording. Confirm that the title and/or the auto date indication or the stopwatch is displayed on the TV screen.
- Put the recording VTR in the recording mode and the VHS/VHS-C Movie in the playback mode.
  - The superimpose recording will start.
  - To finish the dubbing, press the Stop Button on both the VHS/VHS-C Movie and the recording VTR.
- To delete the title while letting the dubbing continue, press the DISPLAY Button. When you want to perform scrolling, refer to the procedure for scroll recording (p. 21).

### Connections



### Operation

- Turn on all connected units.
- Insert a recorded tape into the VHS/VHS-C Movie and locate the scene onto which you want to superimpose a title, and put the camcorder in the playback pause mode just slightly before that scene.
- Put the recording VTR in the recording pause mode.

SECTION 2 : Adjustment Produres

1-2-1 TEST EQUEPMENTS

The following equipments are required for the adjustments.

- (1) Oscilloscope  
Dual Trace,30 MHz,2mV/Div  
10:1 or 1:1 Prove
- (2) Frequency Counter
- (3) Monitor TV

1-2-2 HOW TO READ THE ADJUSTMENT PROCEDURES

TP ----- Connecting point of Mesuring Equipment.  
ADJ. ----- Component being adjusted.  
M.EQ. ----- Mesuring Equipment.  
SPEC. ----- Specifications for adjustment or Method of adjustment.

1-2-3 CHARACTER POSITION ADJUSTMENT

TP	ADJ.	M.EQ.
VIDEO OUT	VR 1	MONITOR
SPEC		
CHARACTER IS CENTER		

- (1) Connect the VW-CG1 to VHS/VHS-C Movie then set the Mode Selector to REC-TITLE Mode and turn on the VHS/VHS-C Movie.
- (2) Press the ALL RESET Key and adjust VR1 so that character portion is center.

1-2-4 CHARACTER SPHERE ADJUSTMENT

TP	ADJ.	M.EQ.
VIDEO OUT TP 2	VR 2	OSCILLOSCOPE
SPEC		
T=1.6 ± 0.5μsec		

- (1) Connect the VW-CG1 to VHS/VHS-C Movie then set the Mode Selector to REC-TITLE and turn on the VHS/VHS-C Movie.
- (2) Adjust VR2 so that the period "T" becomes 1.6+-0.5usec.

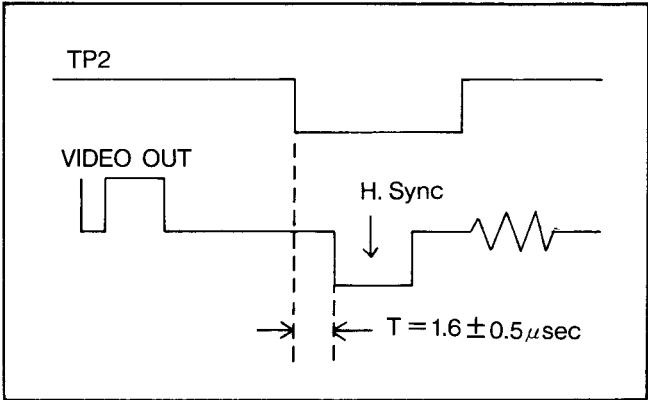


Fig. E1

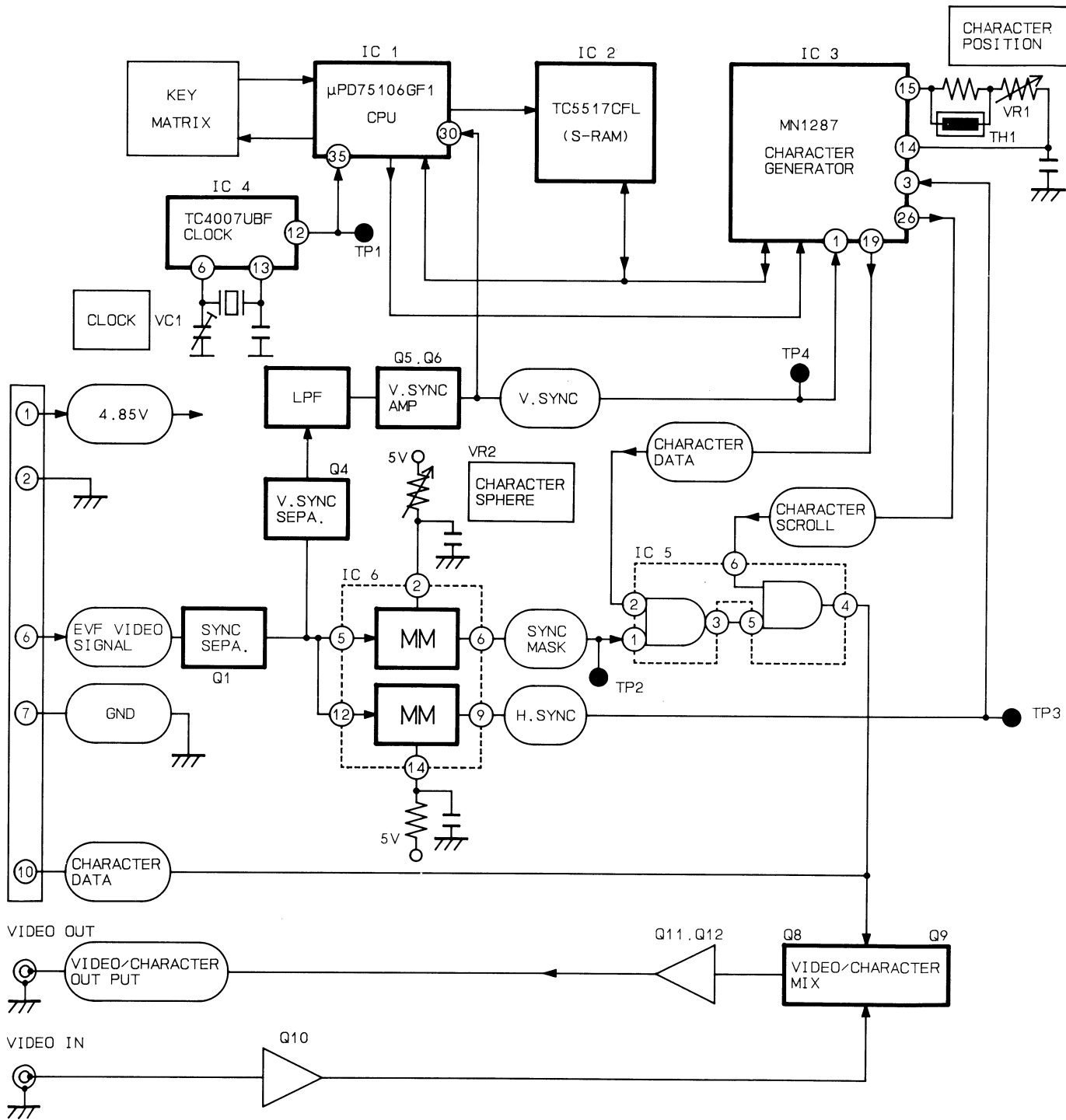
1-2-5 CLOCK FREQUENCY ADJUSTMENT

TP	ADJ.	M.EQ.
TP 1	VC 1	FREQUENCY COUNTER
SPEC		
40960000 ± 1Hz		

- (1) Connect the VW-CG1 to VHS/VHS-C Movie then turn on the VHS/VHS-C Movie.
- (2) Adjust VC1 so that frequency becomes 40960000+-1Hz.

# SECTION 3 : Block Diagram & Schematic Diagram

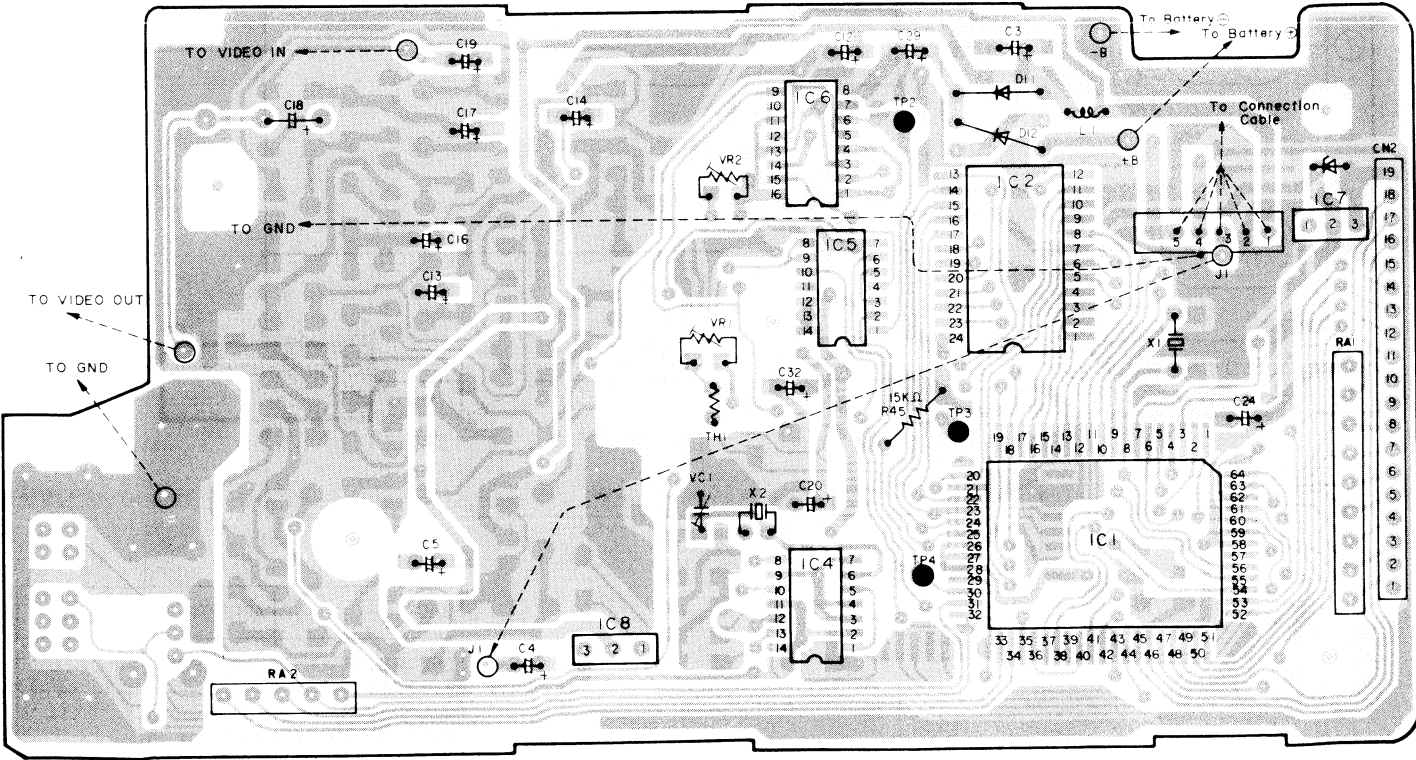
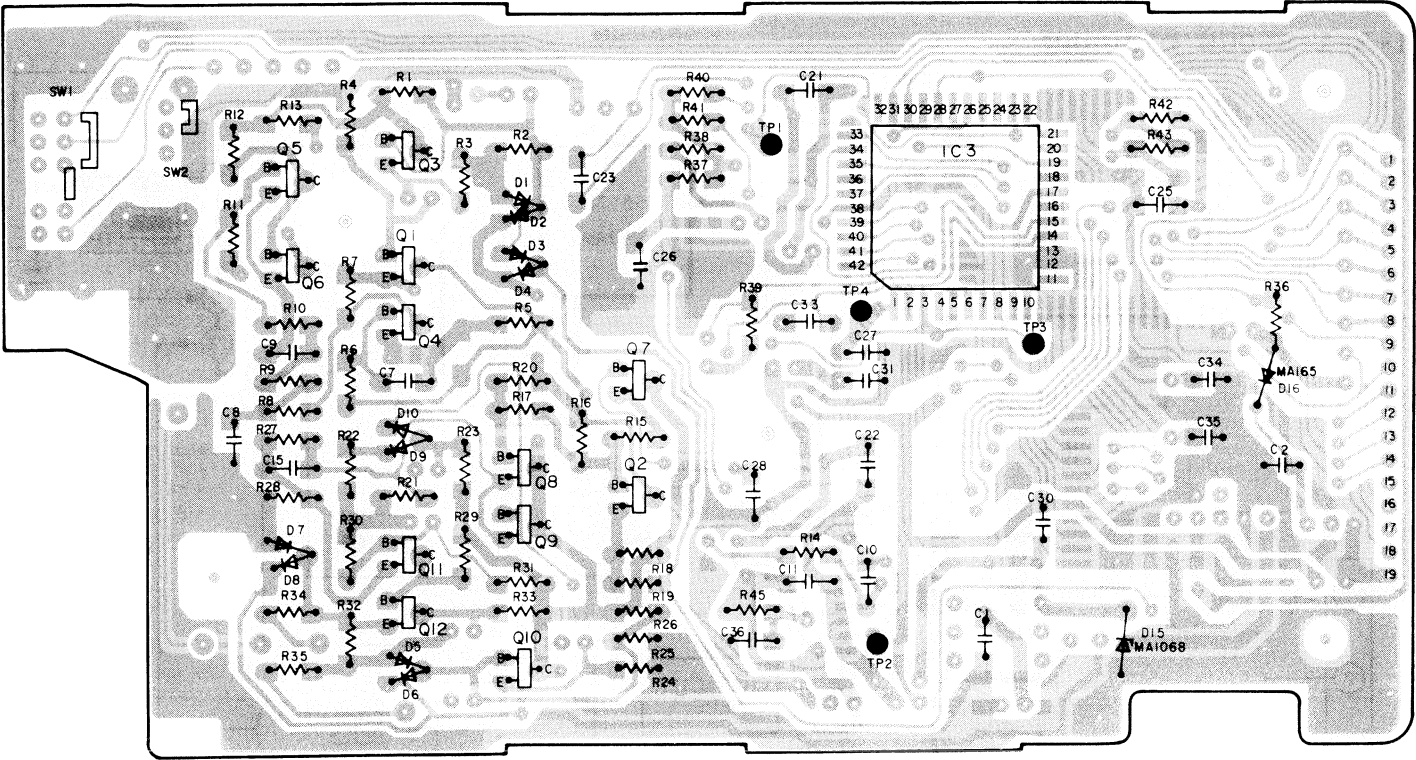
## 1-3-1 BLOCK DIAGRAM



BACK UP	APPROX. 3.7V~4.8V
CPU RESET	VDD LESS THAN 3.3V
AUTO DATE INITIAL VALUE	12:00 1987. 1. 1
STOP WATCH	MAXIMUM 9:59:59.9 MINIMUM 1/10 sec.

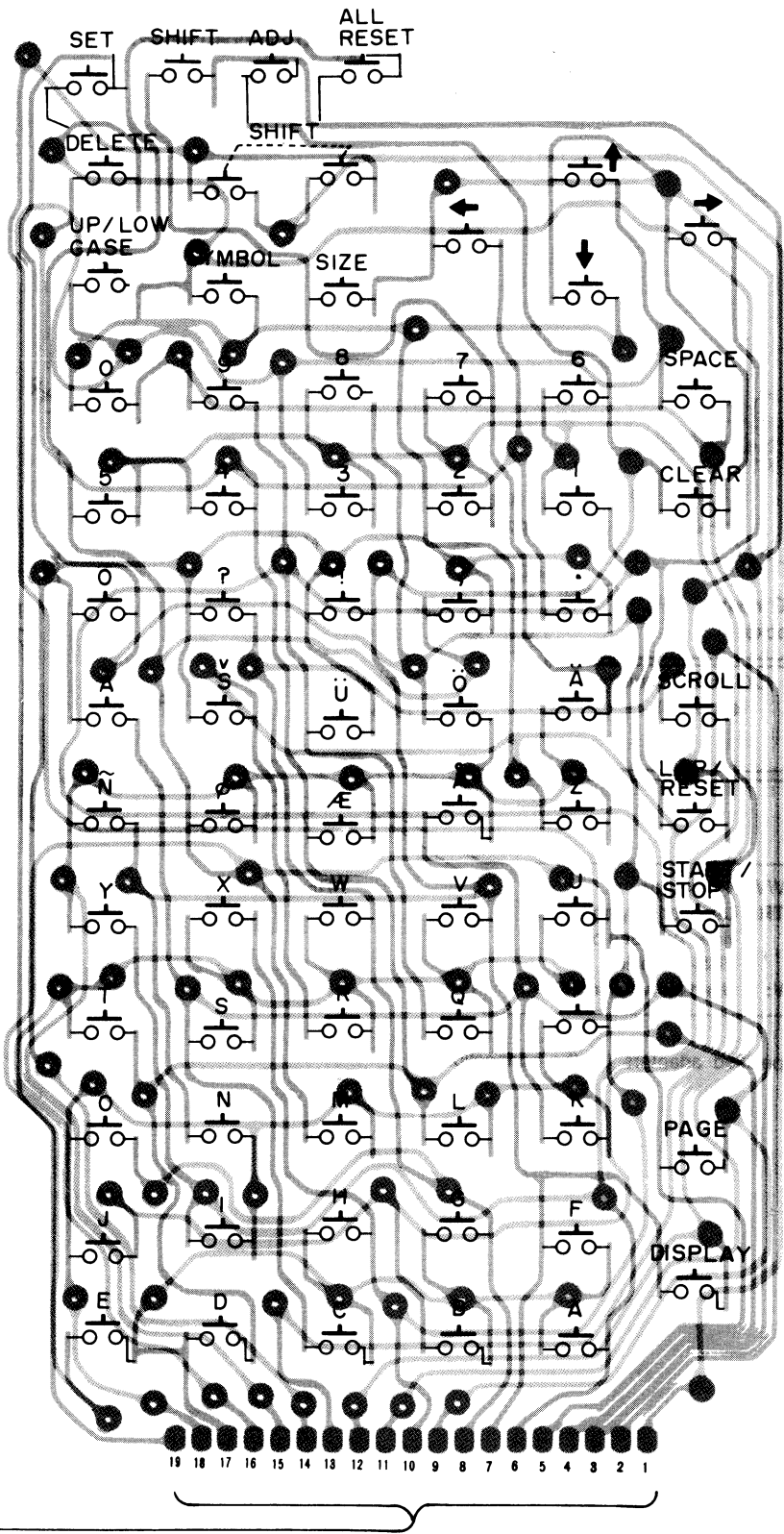


1-3-2 MAIN C.B.A. (VEP66051D,E)

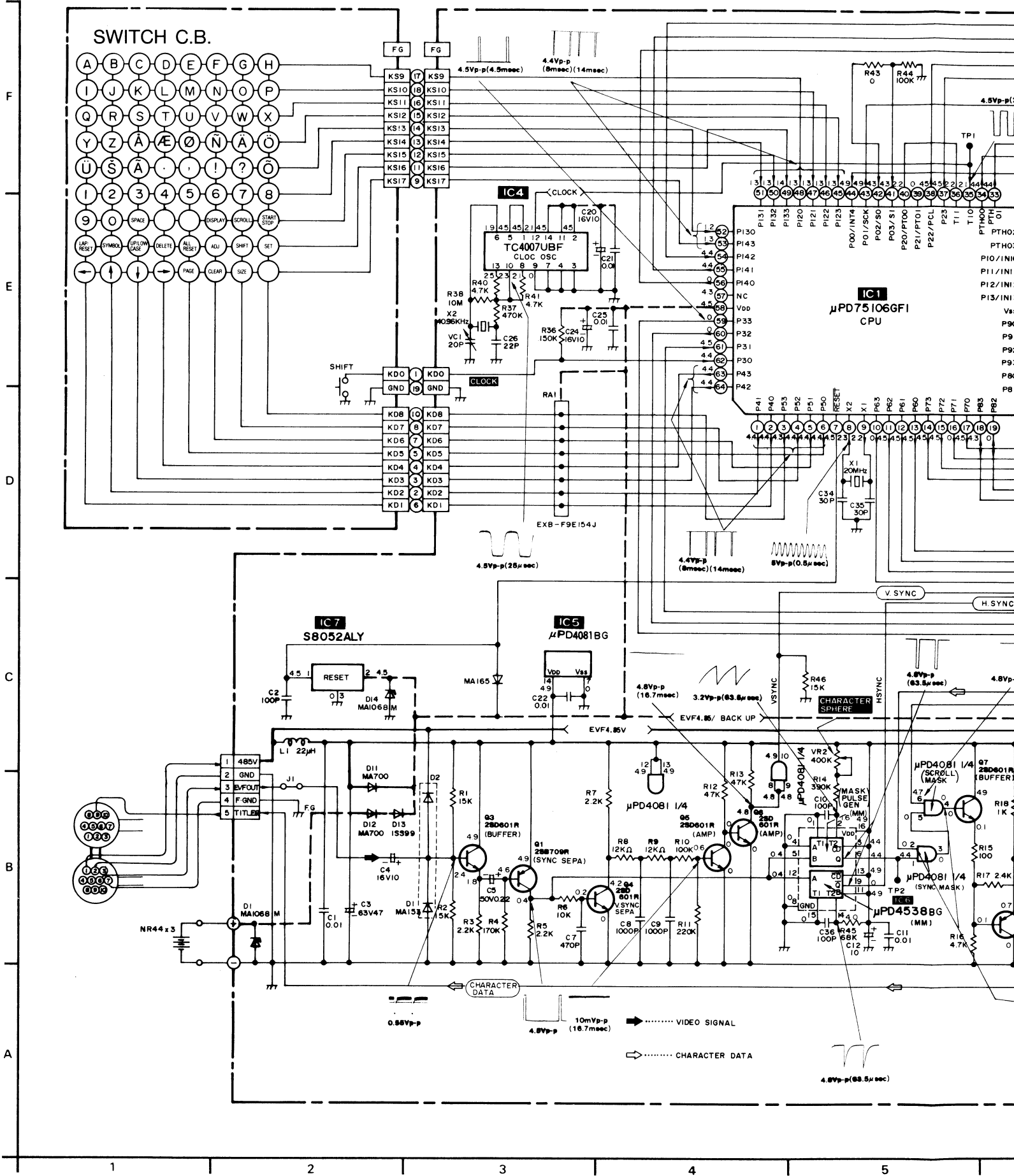


1-3-3 SWITCH C.B.

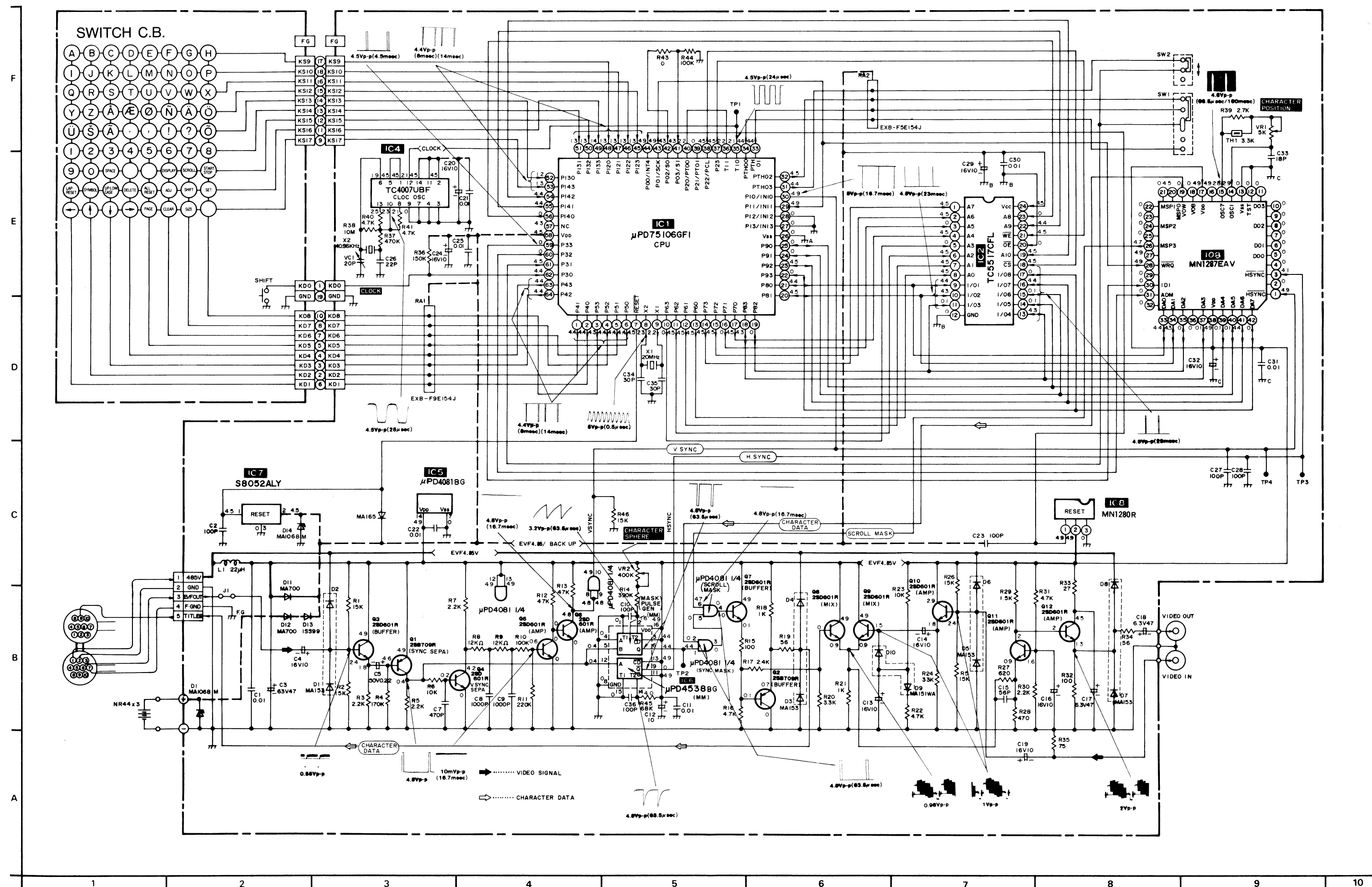
MAIN C.B.A.	
Transistor	
Q1	E-2
Q2	B-3
Q3	F-2
Q4	E-2
Q5	F-2
Q6	E-2
Q7	E-3
Q8	E-2
Q9	D-2
Q10	D-2
Q11	D-2
Q12	D-2
Integrated Circuit	
IC1	A-5
IC2	C-4
IC3	F-4
IC4	A-4
IC5	B-3
IC6	C-3
IC7	C-5
IC8	A-3
Test Point	
TP1	F-3
TP2	D-4
TP3	E-4
TP4	E-4
Adjustment	
VR1	B-3
VR2	C-3
VC1	B-3



1-3-4 SCHEMATIC DIAGRAM

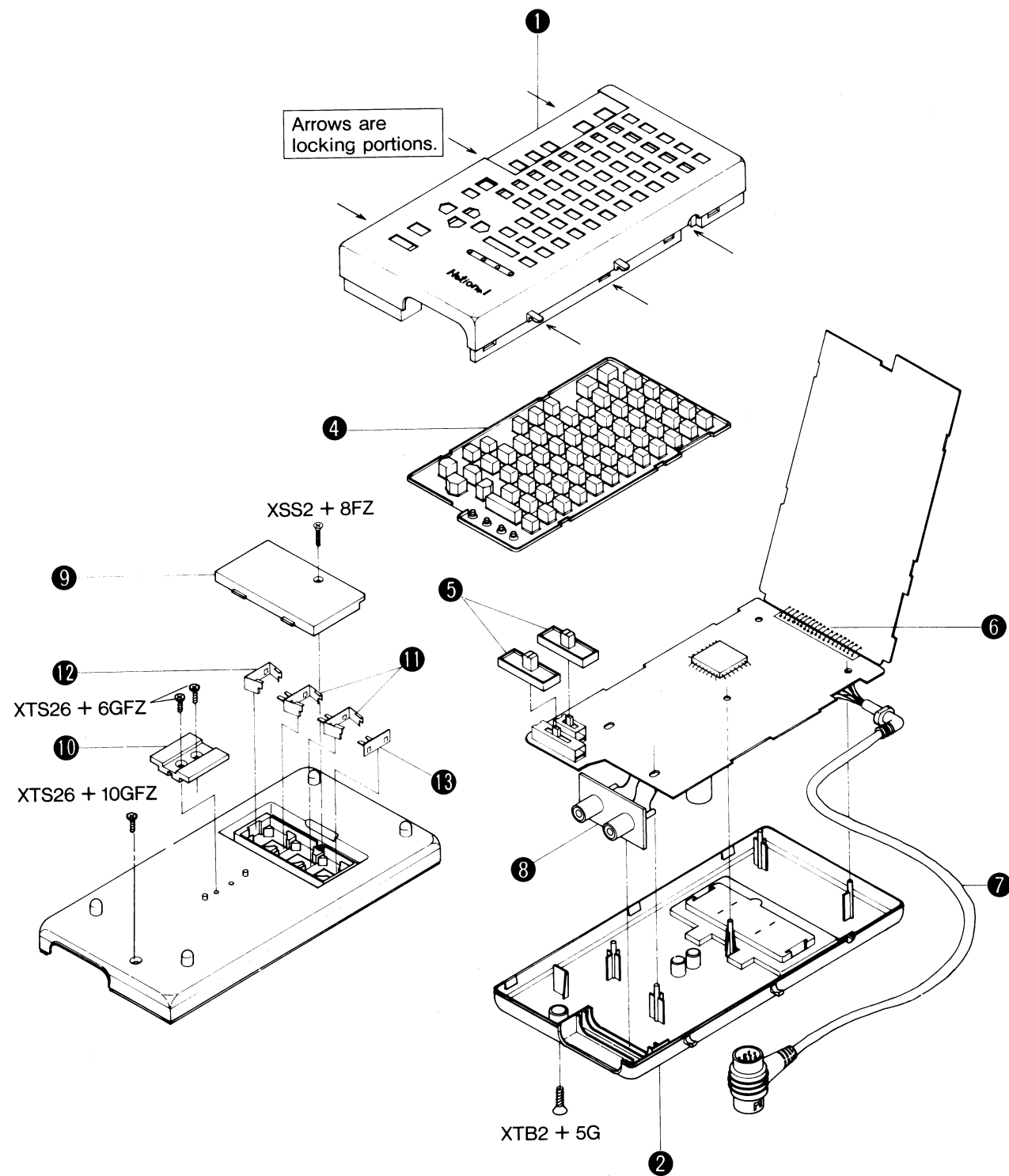


# 1-3-4 SCHEMATIC DIAGRAM

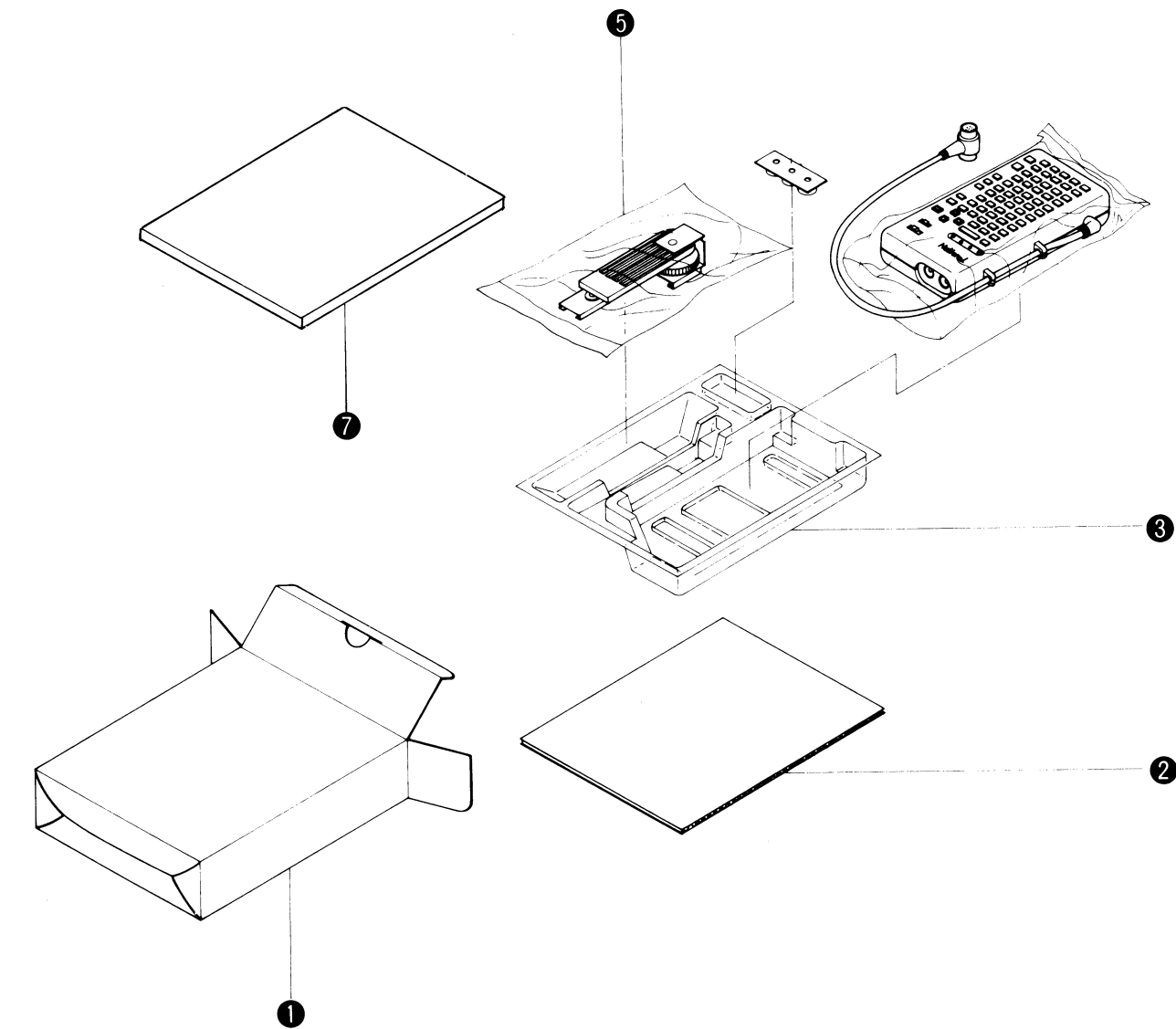


SECTION 4 : Exploded Views

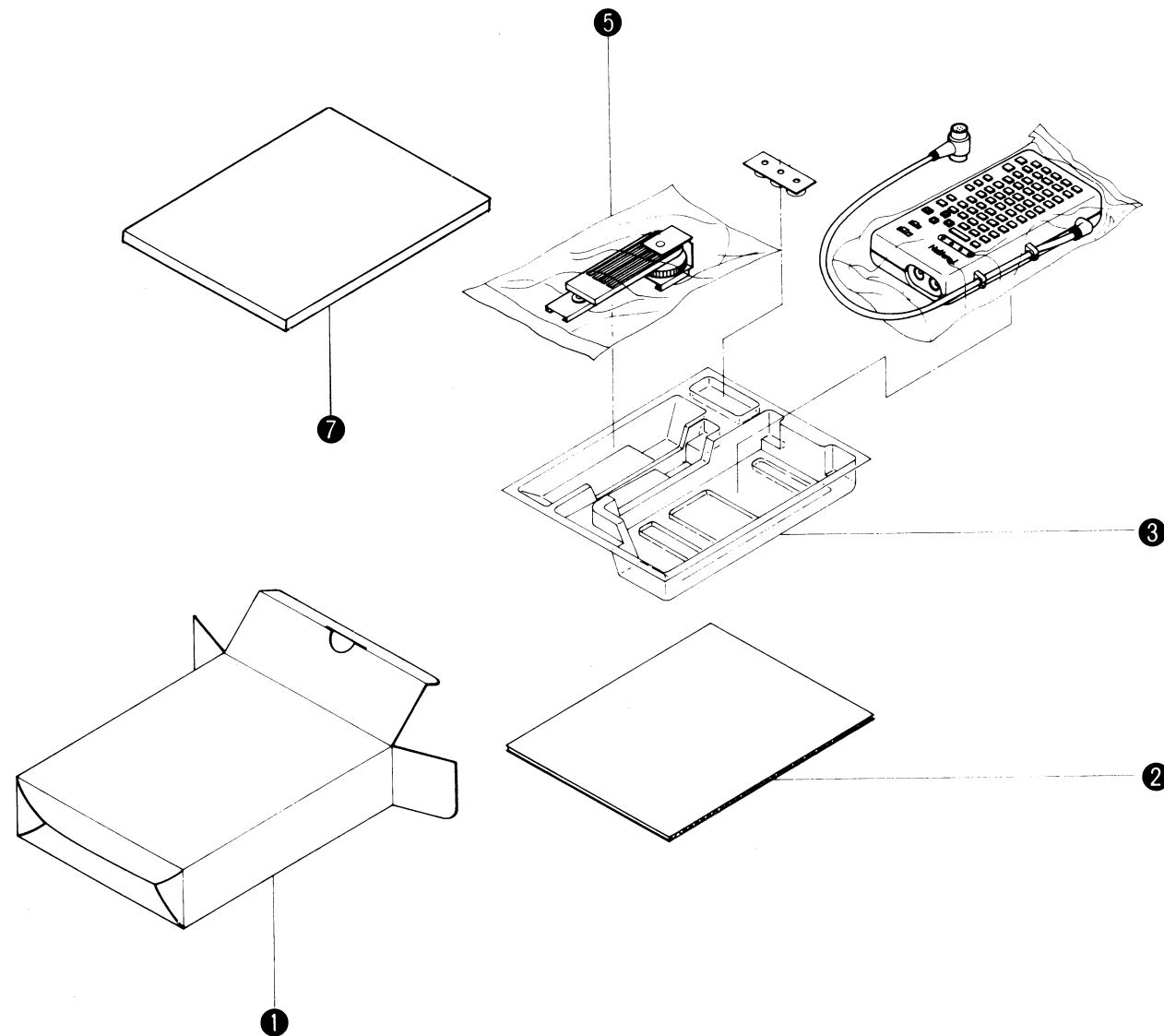
1-4-1 CHARACTER GENERATOR SECTION



1-4-2 PACKING SECTION



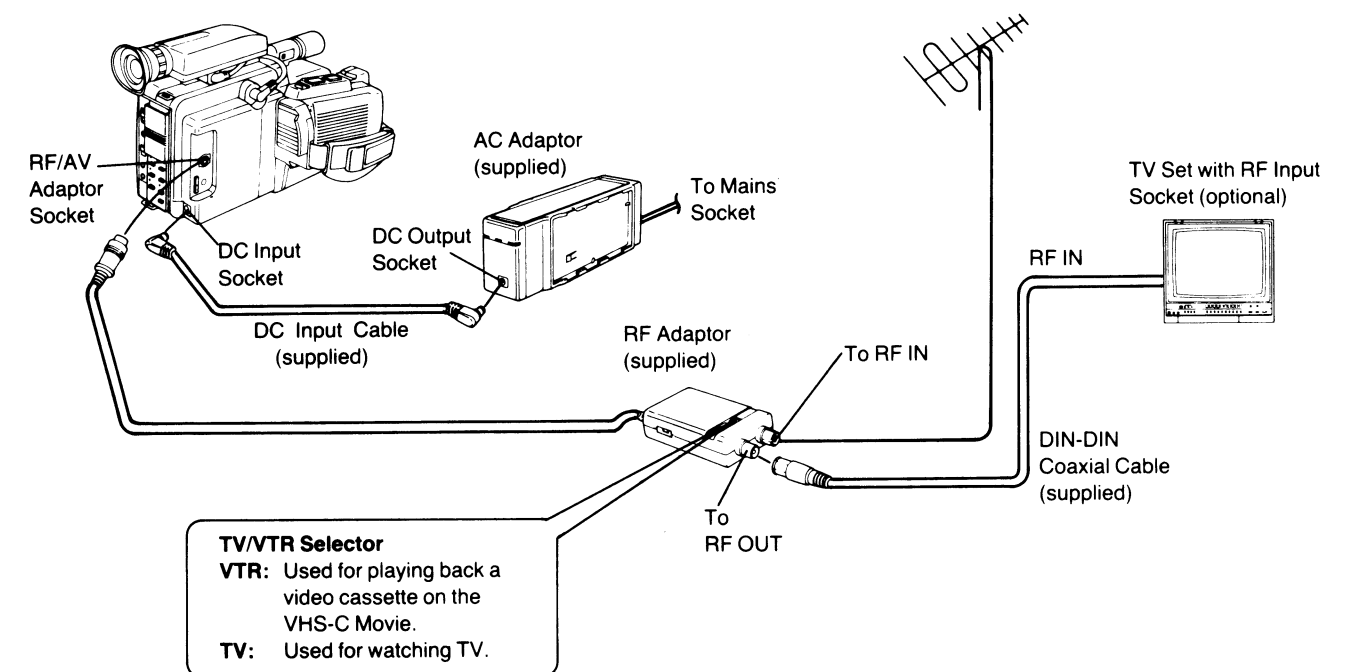
## 1-4-2 PACKING SECTION



## 2. VW-RFC1E, B, A, EN

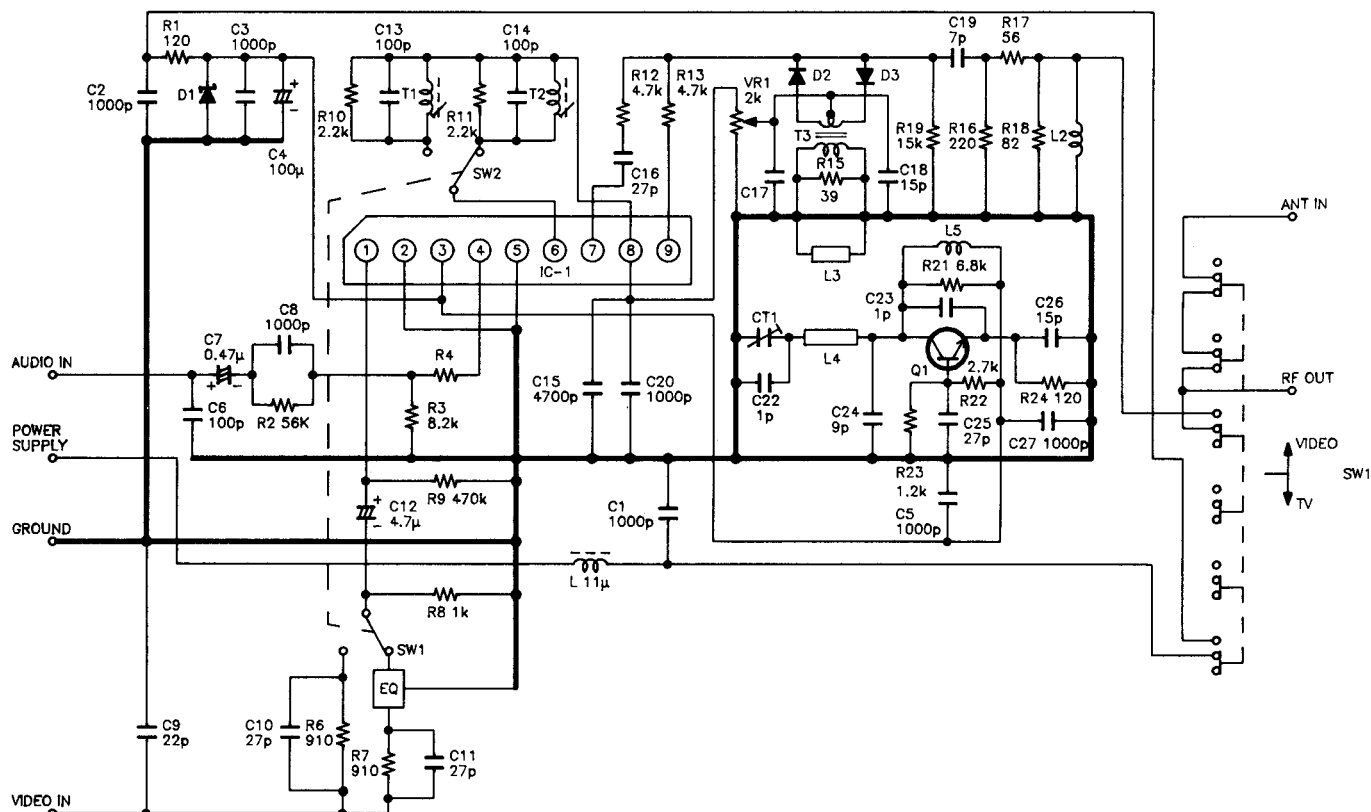
### 2-1 HOW TO ADJUST THE RF CONVERTER FREQUENCY

- (1) Make connection as shown in Fig.R-1.
- (2) Adjust the TV channel to no programme (broadcasting) position with UHF 36CH+4CH (E,B,EN) or VHF 0/1 (A).
- (3) Adjust the RF Adaptor Outpt Channel.

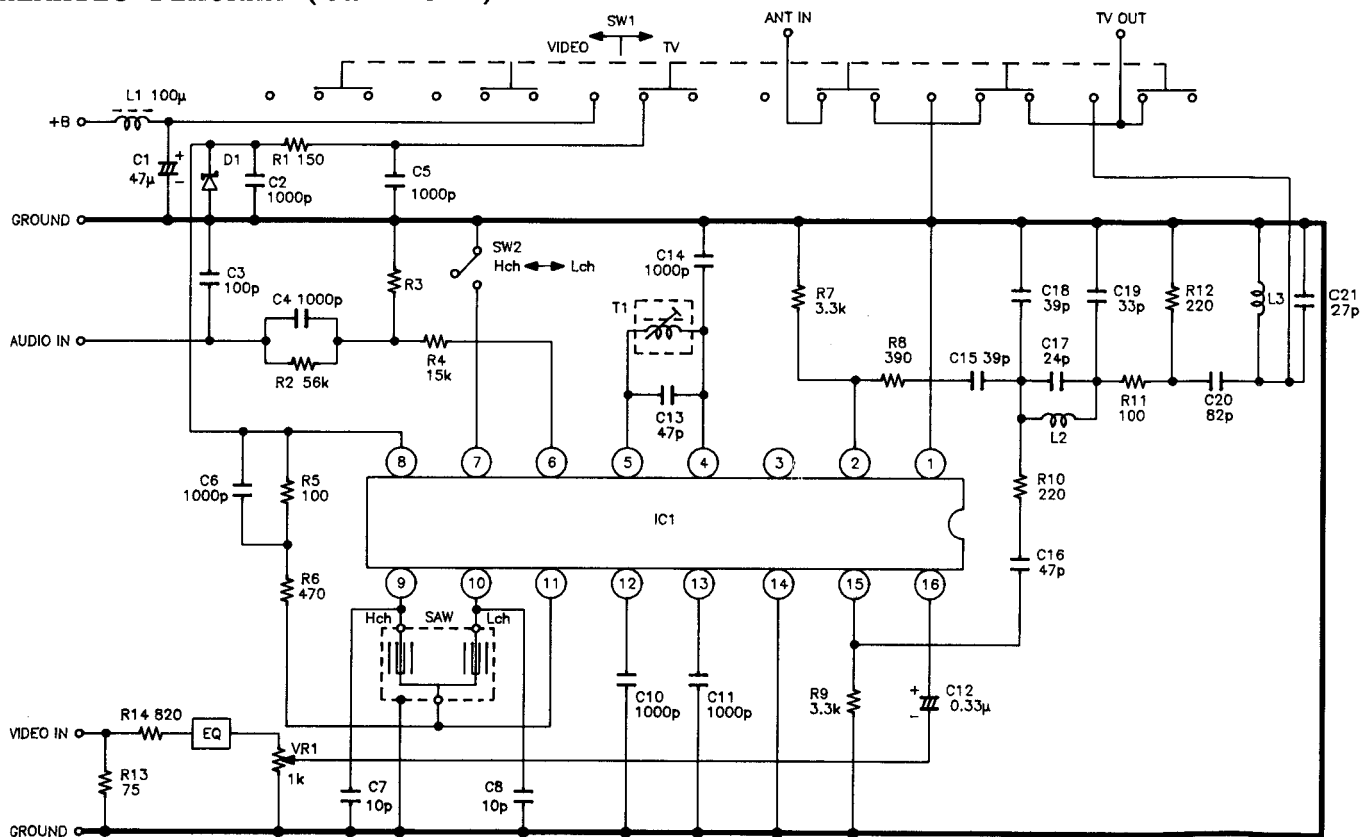


**Note:** Only use the specified adaptors for the connections.

## 2-2 SCHEMATIC DIAGRAM (VW-RFC1E, B, EN)

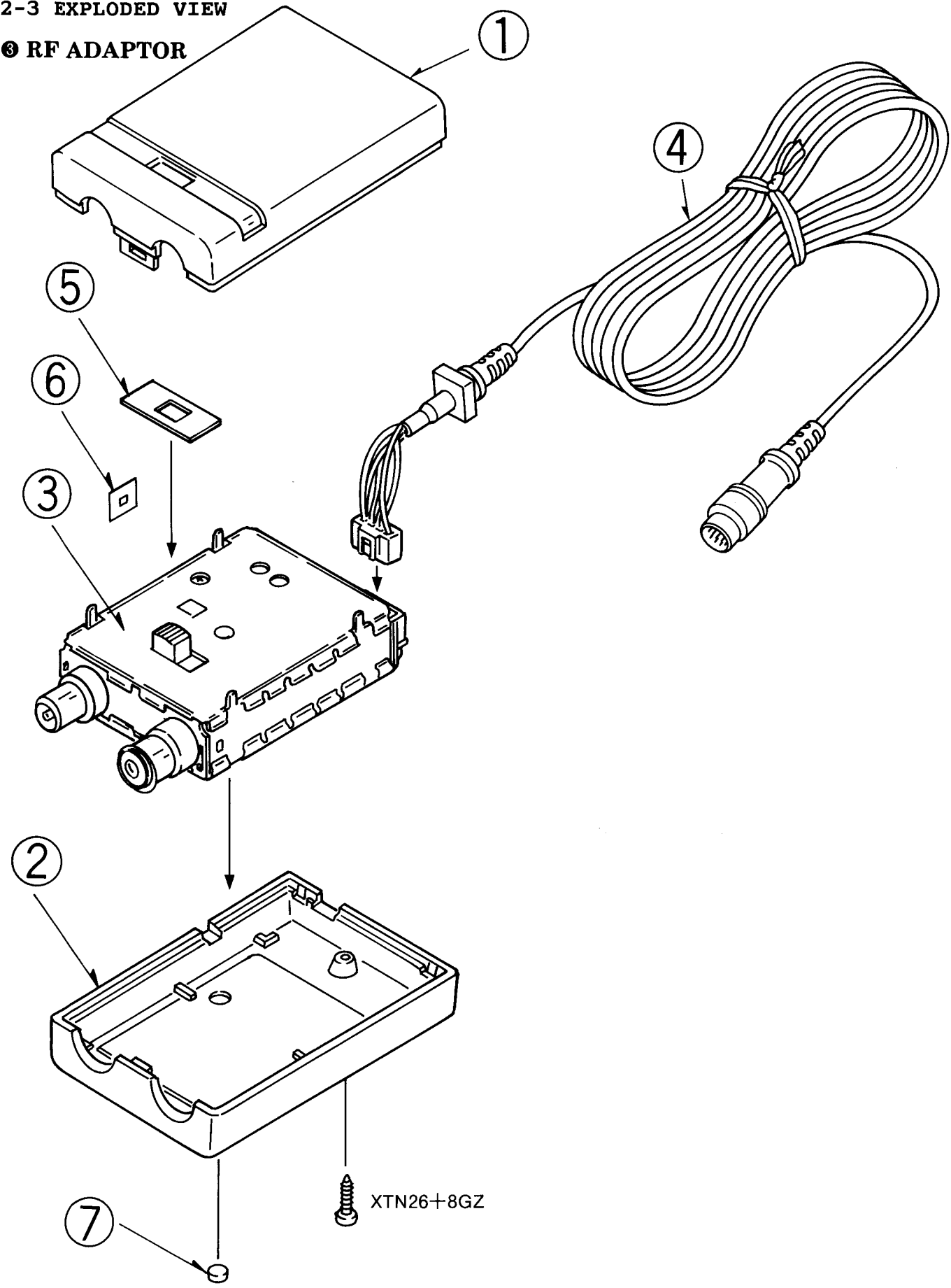


## SCHEMATIC DIAGRAM (VW-RFC1A)



2-3 EXPLODED VIEW

③ RF ADAPTOR

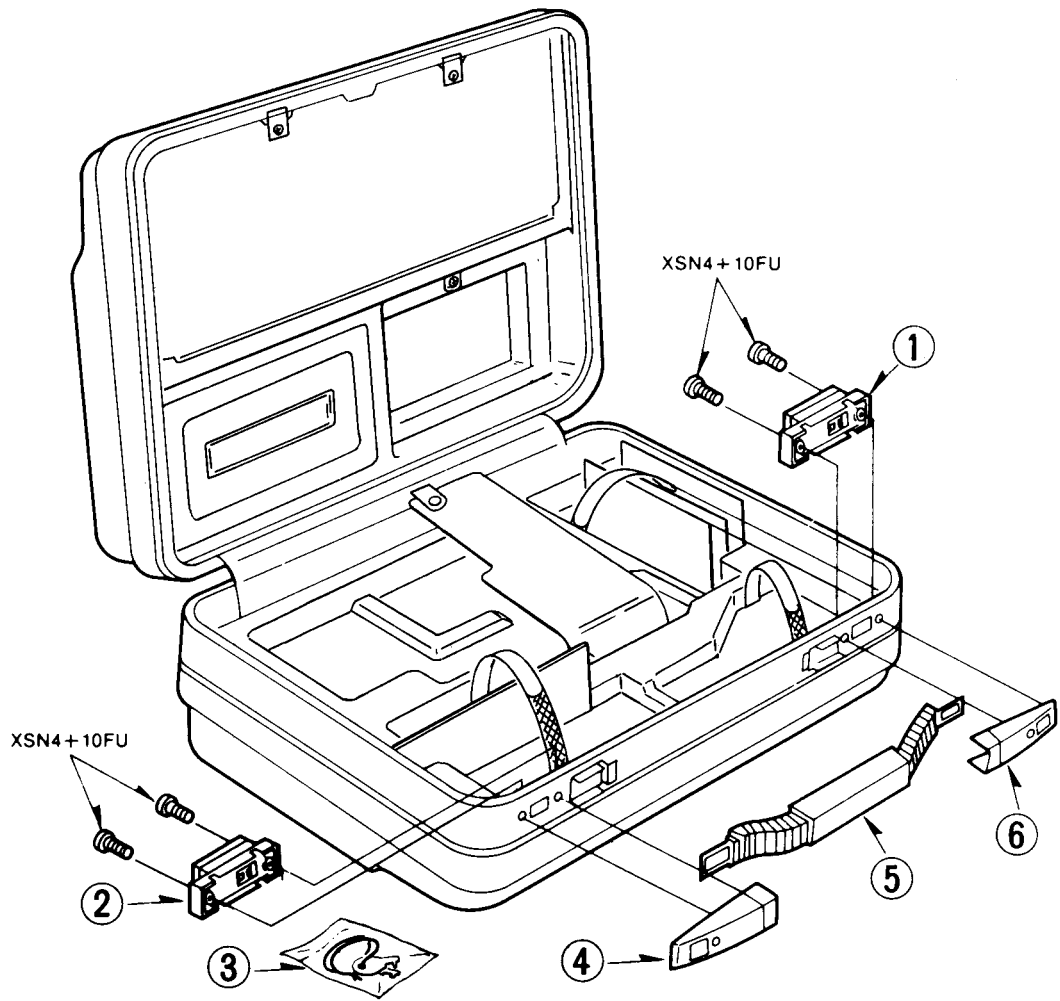




3. VW-SHMC1E, EN

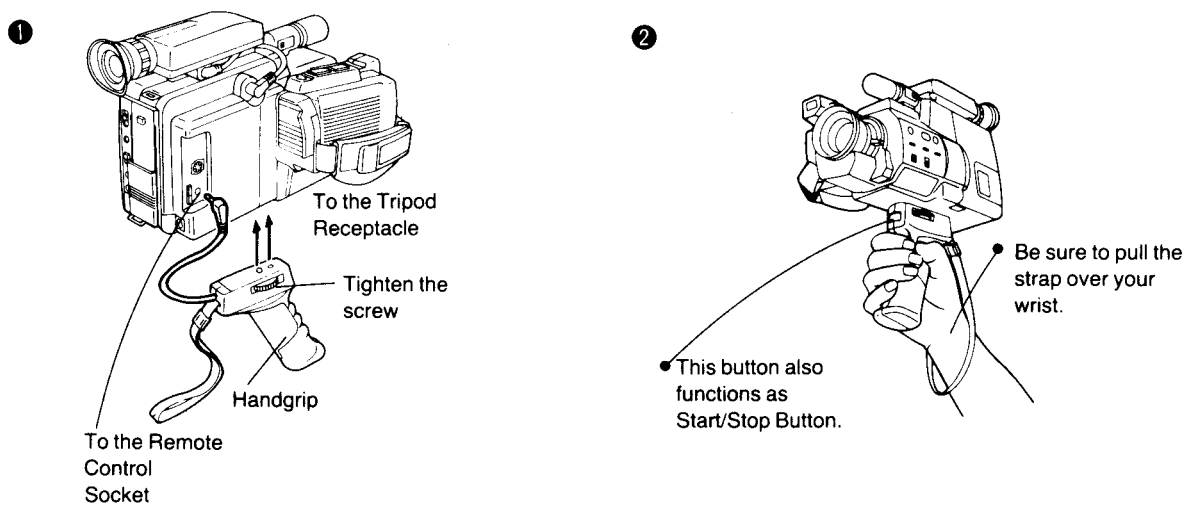
3-1 EXPLODED VIEW

③ SYSTEM CARRYING CASE



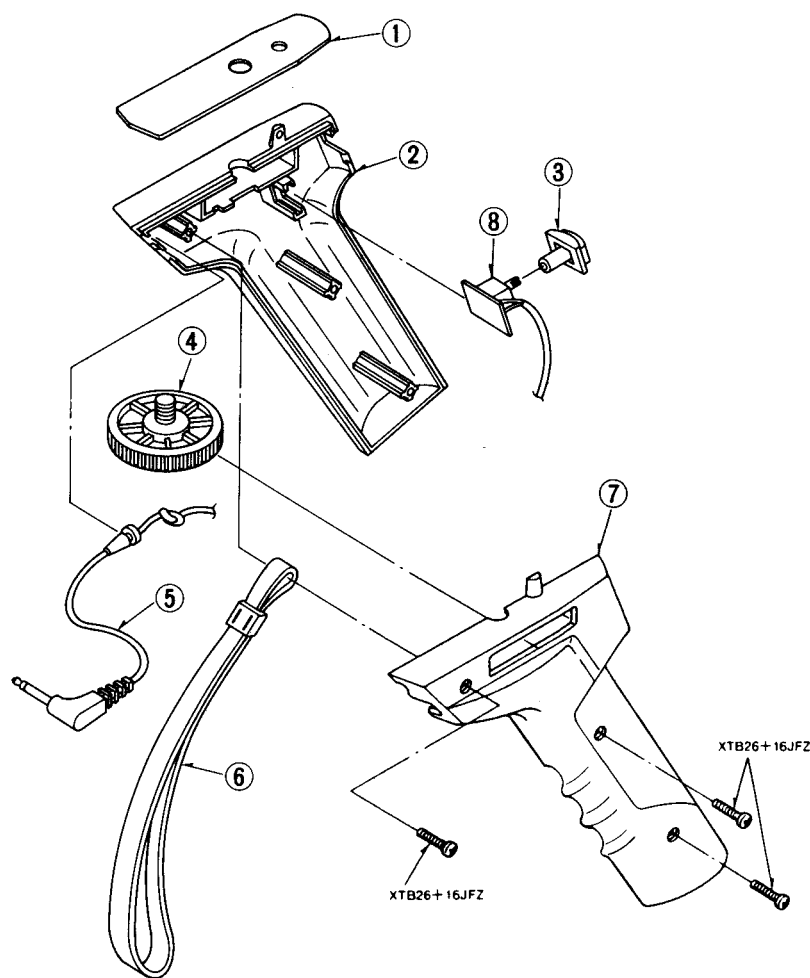
# 4. VW-GPC1E

## 4-1 HOW TO USE THE HANDGRIP



## 4-2 EXPLODED VIEW

### ④ HAND GRIP



# PARTS LIST

**MODEL NO: VW-CG1E/EN, VW-RFC1E/B/A/EN, VW-SHMC1E/EN, VW-GPC1E**

## 1.VW-CG1E/EN Mechanical Replacement Parts List

Note: 1. \* Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE

Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.

[illegible][illegible]

## 2.VW-CG1E/EN Electrical Replacement Parts List

Note: 1. \* Be sure to make your orders of replacement parts according to this list.  
2. IMPORTANT SAFETY NOTICE  
Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.  
3. Unless otherwise specified,  
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uF), P=uF.  
4. The P.C. Board units marked with "N" show below the main assembled parts are intended for assembly to mark (N/A) is no longer available after discontinuation of the product.

[illegible]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
D1 (D2)	MA153	DIODE	1	
D3 (D4)	MA153	DIODE	1	
D5 (D6)	MA153	DIODE	1	
D7 (D8)	MA153	DIODE	1	
D9 (D10)	MA153	DIODE	1	
D11	MA700	DIODE	1	
D12	MA165	DIODE	1	
D14	MA1068M	DIODE	1	
	MA1068M	DIODE	1	
	MA165	DIODE	1	
		INTEGRATED CIRCUITS		
IC1	UPD75106GF1	IC	1	
IC2	TC5517CFL	IC	1	
IC3	MN1287EAV	IC	1	
IC4	TC4007UBF	IC	1	
IC5	UPD4081BG	IC	1	
IC6	UPD4538BG	IC	1	
IC7	S8052ALY	IC	1	
IC8	MN1280R	IC	1	
		COIL		
L1	EL0405SKI220	COIL 22UH	1	
		TRANSISTORS		
Q1	2SB709R	TRANSISTOR	1	
Q2	2SB709R	TRANSISTOR	1	
Q3	2SD601R	TRANSISTOR	1	
Q4	2SD601R	TRANSISTOR	1	
Q5	2SD601R	TRANSISTOR	1	
Q6	2SD601R	TRANSISTOR	1	
Q7	2SD601R	TRANSISTOR	1	
Q8	2SD601R	TRANSISTOR	1	
Q9	2SD601R	TRANSISTOR	1	
Q10	2SD601R	TRANSISTOR	1	
Q11	2SD601R	TRANSISTOR	1	
Q12	2SD601R	TRANSISTOR	1	
		RESISTORS		
R1	ERJ8GCVJ153	CHIP 1/8W 15K	1	
R2	ERJ8GCVJ153	CHIP 1/8W 15K	1	
R3	ERJ8GCVJ222	CHIP 1/8W 2.2K	1	
R4	ERJ8GCVJ474	CHIP 1/8W 470K	1	
R5	ERJ8GCVJ222	CHIP 1/8W 2.2K	1	
R6	ERJ8GCVJ103	CHIP 1/8W 10K	1	
R7	ERJ8GCVJ222	CHIP 1/8W 2.2K	1	
R8	ERJ8GCVJ123	CHIP 1/8W 12K	1	
R9	ERJ8GCVJ123	CHIP 1/8W 12K	1	
R10	ERJ8GCVJ104	CHIP 1/8W 100K	1	
R11	ERJ8GCVJ224	CHIP 1/8W 220K	1	
R12	ERJ8GCVJ473	CHIP 1/8W 47K	1	
R13	ERJ8GCVJ473	CHIP 1/8W 47K	1	
R14	ERJ8GCVJ394	CHIP 1/8W 390K	1	
R15	ERJ8GCVJ101	CHIP 1/8W 100	1	
R16	ERJ8GCVJ472	CHIP 1/8W 4.7K	1	
R17	ERJ8GCVJ242	CHIP 1/8W 2.4K	1	
R18	ERJ8GCVJ102	CHIP 1/8W 1K	1	
R19	ERJ8GCVJ560	CHIP 1/8W 56	1	
R20	ERJ8GCVJ332	CHIP 1/8W 3.3K	1	
R21	ERJ8GCVJ102	CHIP 1/8W 1K	1	
R22	ERJ8GCVJ472	CHIP 1/8W 4.7K	1	
R23	ERJ8GCVJ103	CHIP 1/8W 10K	1	
R24	ERJ8GCVJ332	CHIP 1/8W 3.3K	1	



### 3.VW-RFC1E/B/A/EN Mechanical Replacement Parts List

Note:1.\* Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE

Components identified with the mark (I) have the special characteristics for safety. When replacing any of these components, use only the same type.

[illegible][illegible]

#### 4.VW-RFC1E/B/A/EN Electrical Replacement Parts List

Note: 1.\* Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE  
Components identified with the mark (I) have the special characteristics for safety. When replacing any of these components, use only the same type.

3. Unless otherwise specified,  
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICRO-FARADS (uF), P=uF.

4. The P.C. Board units marked with "I" show below the main assembled parts.

5. Units of limited assembly with mark (NLA) is no longer available after discontinuation of the product.

[illegible][illegible]



## 5.VW-SHMC1E/EN Mechanical Replacement Parts List

Note:1.\* Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE

Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.

[illegible][illegible]

## 6.VW-GPC1E Mechanical Replacement Parts List

Note:1.\* Be sure to make your orders of replacement parts according to this list.

2.IMPORTANT SAFETY NOTICE  
Components identified with the mark (!) have the special characteristics for safety. When replacing any of these components, use only the same type.

[illegible][illegible]